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**REPORT ON THE U.S. GEOLOGICAL SURVEY'S EVALUATION PROGRAM  
FOR STANDARD REFERENCE SAMPLES DISTRIBUTED IN OCTOBER 1995:  
T-137 (TRACE CONSTITUENTS), M-136 (MAJOR CONSTITUENTS),  
N-47 (NUTRIENT CONSTITUENTS), N-48 (NUTRIENT CONSTITUENTS),  
P-25 (LOW IONIC STRENGTH CONSTITUENTS)  
AND Hg-21 (MERCURY)**

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**U.S. GEOLOGICAL SURVEY**

**Open-File Report 96-138**

Golden, Colorado

1996



**DEPARTMENT OF THE INTERIOR**

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**U.S. GEOLOGICAL SURVEY**

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REPORT ON THE U.S. GEOLOGICAL SURVEY'S EVALUATION PROGRAM FOR  
STANDARD REFERENCE SAMPLES DISTRIBUTED IN OCTOBER 1995:  
T-137 (TRACE CONSTITUENTS), M-136 (MAJOR CONSTITUENTS),  
N-47 (NUTRIENT CONSTITUENTS), N-48 (NUTRIENT CONSTITUENTS),  
P-25 (LOW IONIC STRENGTH CONSTITUENTS)  
AND Hg-21 (MERCURY)

By Jerry W. Farrar and H. Keith Long

## ABSTRACT

This report presents the results of the U.S. Geological Survey's analytical evaluation program for 6 standard reference samples--T-137 (trace constituents), M-136 (major constituents), N-47 (nutrient constituents), N-48 (nutrient constituents), P-25 (low ionic strength constituents), and Hg-21 (mercury)--that were distributed in October 1995 to 149 laboratories registered in the U.S. Geological Survey sponsored interlaboratory testing program. Analytical data that were received from 136 of the laboratories were evaluated with respect to: overall laboratory performance and relative laboratory performance for each analyte in the six reference samples. Results of these evaluations are presented in tabular form. Also presented are tables and graphs summarizing the analytical data provided by each laboratory for each analyte in the six standard reference samples. The most probable value for each analyte was determined using nonparametric statistics.

## INTRODUCTION

The U.S. Geological Survey (USGS) conducts an interlaboratory evaluation program semiannually. This program provides a variety of reference materials to accomplish quality assurance testing of laboratories and to provide an adequate supply of samples that contribute to quality control programs of participating laboratories. Natural-matrix reference materials are preferred for use in this interlaboratory evaluation program. A series of samples are prepared and distributed each spring and fall. Occasionally, sediment samples are provided.

The program began in 1962 with a single sample containing major constituents that was prepared from distilled water and reagent grade chemicals. Twenty-three USGS laboratories participated in the 1962 determinations of six analytes in the major standard reference sample (SRS). Since that time, objectives of the program have been to:

- (1) evaluate and improve the performance of USGS and other participating laboratories;
- (2) provide a library of carefully prepared, homogeneous, stable reference materials for use in the quality control programs of laboratories;
- (3) identify analytical problem areas;
- (4) identify quality assurance needs with respect to environmental analyses and develop new reference materials to meet these needs; and
- (5) ascertain the accuracy and precision of analytical methods.

One hundred eighty-five USGS and non-USGS laboratories are registered in the program, which can currently provide eight standard reference sample types:

1. Trace constituents.
2. Major constituents.
3. Nutrient constituents.
4. Low ionic strength constituents.
5. Mercury.
6. Whole water (water with suspended sediment).
7. Acid mine drainage constituents.
8. Sediment (bed material) for major and trace constituents.

When sufficient data are available, a most probable value is statistically determined for each analyte in the SRS.

Though this is not a laboratory certification program, participation in this continuing quality assurance program is mandatory for all laboratories providing water-analyses data for USGS data storage or use (publications). Federal, State, municipal, and university laboratories can participate even though they do not provide data to the USGS. Analyses of these SRS provides the means to alert participating laboratories of possible deficiencies in their analytical operations, and also provides reference materials for in-house quality control programs. Participating laboratories are identified only by a confidential code number.

A library of SRS, from previous evaluations, are available. Participating laboratories can purchase previous SRS for further testing, continuing quality assurance, and quality control programs by contacting:

Chief Laboratory Section  
U.S. Geological Survey  
Branch of Technical Development and Quality Systems  
Denver Federal Center  
Box 25046 MS 401  
Denver, CO 80225-0046

### Purpose and Scope

This report summarizes the analytical results submitted by 136 of the 149 laboratories that requested and were shipped SRS for the January 1996 evaluation (table 1). Not all SRS are requested, nor necessarily analyzed by all the laboratories; nor do all laboratories enrolled in the program participate in each evaluation. Analytical results for the following, which were mailed the week of October 23, 1995, are presented in this report:

T-137	Trace constituents
M-136	Major constituents
N-47	Nutrient constituents
N-48	Nutrient constituents
P-25	Low ionic strength constituents (precipitation)
Hg-21	Mercury

The USGS requested that analytical results be returned by December 15, 1995 for evaluation and preparation of this report. Each participating laboratory is requested to perform those determinations routinely made on the respective SRS for USGS investigations and to indicate the

information was provided, it has been included in the respective data table.

**Table 1.-Laboratory participants in the analyses of standard reference samples distributed in October 1995**

State	City	Participating Laboratory
Arizona	Yuma	Burns and Roe Services Corporation
Arkansas	Fayetteville	University of Arkansas
	Little Rock	Arkansas Department of Pollution Control and Ecology
California	Castiac	Castaic Chemical Laboratory, Department of Water Resources
	Davis	University of California - Davis
	Lakeside	Helix Water District
	Martinez	Central Contra Costa Sanitary District
	Oakland	East Bay Municipal Utility District
	Sacramento	Anlab
	Sacramento	US Bureau of Reclamation
	Sacramento	USGS WRD
	San Diego	USGS WRD
	San Jacinto	Eastern Municipal Water District
	Santa Fe Springs	West Coast Analytical Service, Inc.
	West Sacramento	California Department of Water Resources
	West Sacramento	Quanterra
Colorado	Alamosa	Bureau of Reclamation
	Arvada	Quanterra
	Aurora	Core Laboratories, Inc.
	Boulder	USGS
	Boulder	USGS (Schuster)
	Denver	US Bureau of Reclamation
	Denver	USGS Colorado District Toxic Project
	Denver	Denver Water Department
	Denver	Metro Wastewater Reclamation
	Denver	USGS (Branch of Geochemistry)
	Denver	USGS WRD (Acid Rain Global Climate)
	Fort Collins	City of Fort Collins - Water Quality
	Fort Collins	CSU - Soil Testing Laboratory
	Fort Collins	USDA Forest Service
	Golden	Kaiser - Hill Rocky Flats
	Golden	Huffman Laboratories
	Loveland	Northern Colorado Water Conservation
	Northglen	Northglen Water Treatment Plant
	Westminster	City of Westminster
Florida	Brooksville	SW Florida Water Management District
	Ft. Lauderdale	Spectrum Laboratories, Inc.
	Ocala	USGS WRD QWSU
	Orlando	Post, Bucklye, Schuh, and Jernigan, Inc.
	Ormond Beach	Environmental Laboratory
	Tallahassee	City of Tallahassee
	Tallahassee	Florida Department of Environmental Regulations
	Tallahassee	Savannah Laboratories
	Tampa	Hillsborough County Environmental Protection Commission
	West Palm Beach	South Florida Water Management District
Georgia	Athens	University of Georgia
	Atlanta	Georgia Department of Natural Resources
	Atlanta	USGS WRD

**Table 1.-Laboratory participants in the analyses of standard reference samples distributed in October 1995--Continued**

State	City	Participating Laboratory
Georgia	Decatur	Dekalb County Water Quality Laboratory
	Tifton	USDA - ARS
Hawaii	Honolulu	University of Hawaii - SOEST Analytical Services
Idaho	Boise	US Bureau of Reclamation
	Pocatello	Idaho State University
Illinois	Champaign	Hazardous Waste Research Center
	Champaign	Illinois Environmental Protection Agency
Indiana	Indianapolis	Indianapolis Department of Public Works
Iowa	Des Moines	University Hygienic Laboratory, Des Moines Branch
Kansas	Lawrence	Kansas Geological Survey
	Topeka	City of Topeka
	Topeka	Kansas Department of Health and Environment
	Wichita	City of Wichita
Kentucky	Frankfort	Division of Environmental Studies
	Lexington	Kentucky Geological Survey
	Louisville	Metropolitan Sewer District
Maine	Orono	Sawyer Environmental Center, University of Maine
	Orono	University of Maine
Maryland	Baltimore	Maryland Department of Health and Mental Hygiene
Massachusetts	South Boston	Massachusetts Highway Department
Michigan	Ann Arbor	University of Michigan, Department of Geological Science
	Ann Arbor	University of Michigan
	Detroit	Detroit Water and Sewerage Department
Minnesota	Minneapolis	University of Minnesota, Department of Geology and Geophysics
	St. Paul	Metro Waste Control Commission
	St. Paul	University of Minnesota
Missouri	Columbia	University of Missouri
	Jefferson City	Missouri Department of Health
Montana	Butte	Montana Bureau of Mines & Geology
Nevada	Boulder City	US Bureau of Reclamation
	Las Vegas	City of Las Vegas
	Las Vegas	University of Nevada - Las Vegas
	Reno	Desert Research Institute
	Reno	Nevada State Health Laboratory
	Reno	Reno-Sparks Wastewater Treatment
	Sutcliffe	Pyramid Lake Fisheries
	Trenton	New Jersey Department of Health
New Jersey	Trenton	New Jersey Department of Health
New Mexico	Albuquerque	City of Albuquerque
New York	Albany	USGS WRD
	Brockport	SUNY - Brockport
	Buffalo	Erie County Laboratory
	Grahamsville	New York City Department of Environmental Protection
	Hauppauge	Suffolk County Water Authority
	Hempstead	Nassau County Department of Health
	Milbrook	Institute of Ecosystem Studies
	North Babylon	Ecotest Laboratories
	Port Washington	Nytest Environmental, Inc.
	Rochester	Monroe County
	Shokan	New York City Department of Environmental Protection
	Syracuse	Onandaga County DDS
	Valhalla	Department of Environmental Protection
	Yorktown	New York City Department of Environmental Protection
North Carolina	Charlotte	Mecklenburg County



**Table 1.-Laboratory participants in the analyses of standard reference samples distributed in October 1995--Continued**

State	City	Participating Laboratory
North Carolina	Durham	Duke University
	Greensboro	City of Greensboro
North Dakota	Bismarck	North Dakota State Health Department
	Bismarck	North Dakota State Water Commission
Ohio	Cincinnati	US EPA
	Tiffin	Heidelberg College
	Wooster	The Ohio State University
Oklahoma	Norman	Oklahoma Geological Survey
	Oklahoma City	Oklahoma Department of Environmental Quality
Oregon	Corvallis	USDA - CCAL
	Tigard	Unified Sewerage Agency
Pennsylvania	Harrisburg	Pennsylvania Department of Environmental Resources
	Somerset	Geochemical Testing
Puerto Rico	San Juan	Department of Natural Resources
South Carolina	Columbia	South Carolina Department of Natural Resources
South Dakota	Brookings	Northern Great Plains Laboratory
	Brookings	SDSU - Water Quality Laboratory
	Vermillion	South Dakota Geological Survey
Tennessee	Chattanooga	TVA Environmental Chemistry
	Jackson	Jackson Branch Laboratory
	Knoxville	Cooperative Park Studies Unit
Texas	Austin	Lower Colorado River Authority
	Tyler	Analytical Testing Laboratories
	College Station	Texas A & M
Vermont	Waterbury	Vermont Agency of Natural Resources
Virginia	Culpepper	ESS Labs
	Manassas	Ocoquan Watershed Monitoring Laboratory
	Richmond	Consolidated Laboratory Services
Washington	Seattle	Frontier Geoscience
	Seattle	Brooks-Rand, Ltd.
Wisconsin	Madison	University of Wisconsin, Department of Hygiene
	Madison	University of Wisconsin, Department of Geology and Geophysics
	Milwaukee	Milwaukee Metro Sewerage District

### Preparation of Standard Reference Samples

All of the SRS used in this evaluation were prepared by personnel of the USGS in Golden, Colorado and were analyzed for analyte concentrations and physical property values prior to mailing. A library of reference samples is maintained and can be requested by participating laboratories for use in their quality control programs.

Trace constituent sample T-137 was prepared using water collected from the Eagle River near Edwards, Colorado. The water was pumped through 0.45, 0.2- and 0.1- $\mu$ m filters, in series, into a 3500-L polypropylene drum. The water was continuously circulated and passed through a 0.1- $\mu$ m filter and ultraviolet sterilizer for 24 hours. Following this circulation, the water was acidified to pH 1.3 with nitric acid and chlorinated to 5 ppm free chlorine. The trace constituent concentrations were adjusted by adding reagent grade chemicals. The sample was circulated an additional 24 hours prior to bottling. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1- $\mu$ m filter. The 500-mL polypropylene bottles used were acid leached and deionized-water rinsed, and autoclave sterilized.



Major constituent sample M-136 was prepared using water collected from the Platte River near Ft. Lupton, Colorado. The water was pumped through 0.45, 0.2- and 0.1- $\mu$ m filters, in series, into a 1300-L polypropylene drum. The water was chlorinated to 5-ppm free chlorine with sodium hypochlorite, continuously circulated, and passed through a 0.1- $\mu$ m filter and ultraviolet sterilizer for 24 hours prior to bottling. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1- $\mu$ m filter. The 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Nutrient sample N-47 was prepared using water collected from the Fall River near Idaho Springs, Colorado. These samples were prepared the week prior to the mailing for this SRS evaluation. The water was pumped through 0.45, 0.2- and 0.1- $\mu$ m filters, in series, into a 600-L polypropylene drum and continuously circulated and passed through a 0.1- $\mu$ m filter for 24 hours. The desired nutrient concentrations were obtained by adding reagent-grade chemicals. The sample was continuously circulated for 24 hours prior to being bottled. The 250-mL polyethylene bottles used were new, amber, acid leached, and deionized-water rinsed.

Nutrient sample N-48 was prepared using water collected from the Fall River near Idaho Springs, Colorado. These samples were prepared the week prior to the mailing for this SRS evaluation. The water was pumped through 0.45, 0.2- and 0.1- $\mu$ m filters, in series, into a 600-L polypropylene drum and continuously circulated and passed through a 0.1- $\mu$ m filter for 24 hours. The desired nutrient concentrations were obtained by adding reagent-grade chemicals. The sample was continuously circulated for 24 hours prior to being bottled. The 250-mL polyethylene bottles used were new, amber, acid leached, and deionized-water rinsed.

Sample P-25 was prepared in a 400-L polypropylene drum using snow collected at Squaw Pass near Summit Lake in Colorado. The collected snow was allowed to melt; then it was pumped into the drum through 0.45, 0.2- and 0.1- $\mu$ m filters in series. Desired phosphate and fluoride concentrations were obtained by adding reagent-grade chemicals. Prior to bottling, the sample was continuously mixed for 24 hours while being circulated through a 0.1- $\mu$ m filter and an ultraviolet sterilizer. During bottling the sample was pumped through an ultraviolet sterilizer and a 0.1- $\mu$ m filter. The 500-mL polypropylene bottles used were acid leached, deionized-water rinsed, and autoclave sterilized.

Sample Hg-21 was prepared using water collected from the Fall River near Idaho Springs, Colorado. The sample was prepared in a 190-L polypropylene drum. The river water was pumped into this drum through 0.45, 0.2- and 0.1- $\mu$ m filters in series. The water was continuously circulated and passed through a 0.1- $\mu$ m filter and ultraviolet sterilizer for 48 hours. Nitric acid (5-percent, v/v) and dichromate ion (0.05-percent, w/w) were added to stabilize the sample. The desired mercury concentration was obtained by adding a mercury standard solution. Following an additional 24 hours of circulation, the sample was bottled. The 250-mL glass bottles and tetrafluoroethylene fluorocarbon resin caps used were new, acid leached, and deionized-water rinsed.

## LABORATORY ANALYSES

The participating laboratories were asked to determine analytes which are summarized in table 2. The number of analytes varied from 28 in T-137 (trace constituents) to 1 in Hg-21 (mercury).

**Table 2.-Analytes determined in standard reference samples distributed in October 1995**

[mg/L, milligrams per liter; µg/L, micrograms per liter; µS/cm, microsiemens per centimeter at 25 degrees Celsius]

Analyte or property		Units	T-137	M-136	N-47, 48	P-25	Hg-21
Acidity	Acidity as CaCO <sub>3</sub>	mg/L				X	
Alk	Alkalinity as CaCO <sub>3</sub>	mg/L		X			
Ag	Silver	µg/L	X				
Al	Aluminum	µg/L	X				
As	Arsenic	µg/L	X				
B	Boron	µg/L	X	X			
Ba	Barium	µg/L	X				
Be	Beryllium	µg/L	X				
Ca	Calcium	mg/L	X	X		X	
Cd	Cadmium	µg/L	X				
Cl	Chloride	mg/L		X			
Co	Cobalt	µg/L	X				
Cr	Chromium, total	µg/L	X				
Cu	Copper	µg/L	X				
DSRD	Dissolved solids	mg/L		X			
F	Fluoride	mg/L		X		X	
Fe	Iron	µg/L	X				
Hg	Mercury	µg/L					X
K	Potassium	mg/L	X	X		X	
Li	Lithium	µg/L	X				
Mg	Magnesium	mg/L	X	X		X	
Mn	Manganese	µg/L	X				
Mo	Molybdenum	µg/L	X				
Na	Sodium	mg/L	X	X		X	
NH <sub>3</sub> as N	Ammonia	mg/L			X		
NH <sub>3</sub> +Org N as N	Ammonia + Organic N	mg/L			X		
Ni	Nickel	µg/L	X				
NO <sub>3</sub> +NO <sub>2</sub> as N	Nitrate + Nitrite	mg/L			X		
Pb	Lead	µg/L	X				
pH		unit		X		X	
PO <sub>4</sub> as P	Orthophosphate	mg/L			X		
total P as P	Phosphorus	mg/L		X	X		
Sb	Antimony	µg/L	X				
Se	Selenium	µg/L	X				
SiO <sub>2</sub>	Silica	mg/L	X	X			
SO <sub>4</sub>	Sulfate	mg/L		X		X	
Sp Cond	Specific conductance	µS/cm		X		X	
Sr	Strontium	µg/L	X	X			
Tl	Thallium	µg/L	X				
U	Uranium	µg/L	X				
V	Vanadium	µg/L	X	X			
Zn	Zinc	µg/L	X				

Laboratories were requested to identify the method used for each analyte according to table 3 analytical method codes.

**Table 3.-Analytical-method codes**

Code	Method
0	Other
1	Atomic absorption: direct, air
2	Atomic absorption: direct, nitrous oxide
3	Atomic absorption: graphite furnace
4	Inductively coupled plasma
5	Direct current plasma
6	Inductively coupled plasma/Mass spectrometry
7	Ion chromatography
8	Atomic absorption: cold vapor
9	Atomic fluorescence
10	Atomic absorption: extraction [ <i>specify chelating agents</i> ]
11	Atomic absorption: hydride [ <i>specify reducing agent</i> ]
12	Flame emission
20	Titration: colorimetric [ <i>specify color reagent</i> ]
21	Titration: electrometric [ <i>specify reducing or oxidizing agent/color reagent</i> ]
22	Colorimetric: [ <i>specify reducing or oxidizing agent/color reagent</i> ]
40	Ion selective electrode
41	Electrometric [ <i>pH and Specific Conductance</i> ]
50	Gravimetric: [ <i>specify filtration, evaporation, and so forth</i> ]
51	Turbidimetric

Participating laboratories were also asked to use the references listed below to further define the methods.

1. American Public Health Association and others, 1992, Standard methods for the examination of water and wastewater 18th ed: Washington, D.C., American Public Health Association, 981p.
2. American Society for Testing and Materials, Annual book of ASTM standards: Philadelphia, v. 11.01, and v. 11.02.
3. Kopp, J.F., and McKee, G.F., 1979, Methods for chemical analysis of water and wastes: Cincinnati, U.S. Environmental Protection Agency, EPA 600/4-79-020, rev. 1983, 460 p.
4. Fishman, M.J., and Friedman, L.C., eds., 1989. Methods for determination of inorganic substances in water and fluvial sediments (3d ed.): U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Chapter A1, 545 p.
5. Miscellaneous manufacturer's instrument manuals or references.

## LABORATORY PERFORMANCE RATINGS

To facilitate interlaboratory performance comparisons, laboratory performance ratings, based on the analyses reported for each SRS, are included in tables 4 through 10 in this report. Averages of the analyte ratings and the number of analyte values reported for each SRS are given for each participating laboratory. Laboratory performance for each analyte is rated on a scale 4 to 0, based on the absolute Z-value, as listed below:

Rating	Absolute Z-value
4 (Excellent)	0.00 to 0.50
3 (Good)	0.51 to 1.00
2 (Satisfactory)	1.01 to 1.50
1 (Questionable)	1.51 to 2.00
0 (Poor)	Greater than 2.00

Overall laboratory performance ratings greater than 2.4 are considered satisfactory. Overall laboratory performance ratings between 2.0 and 2.39 are considered marginal; those less than 2.0 are considered poor.

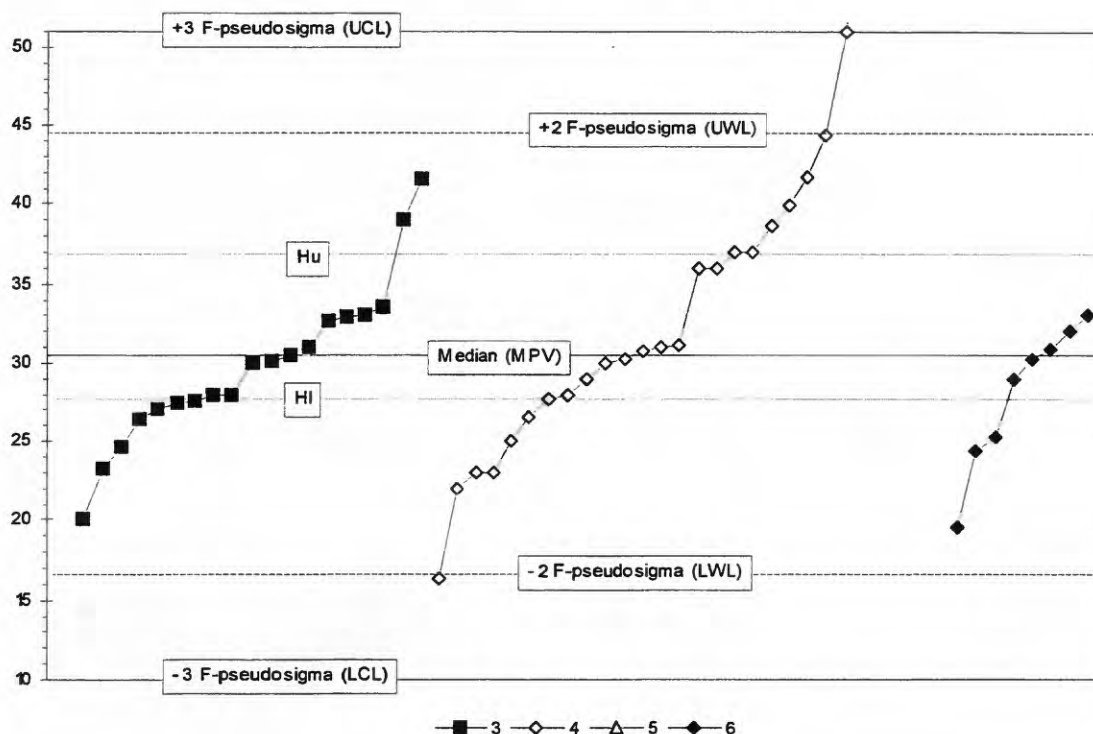
## STATISTICAL PRESENTATION OF DATA

Data in this report have been evaluated using nonparametric statistics as described by Hoaglin and others (1983). This statistical approach is a resistant statistic because the median is not influenced by outliers as is the mean in traditional statistics.

Analytical data for each analyte are presented in tabular and graphical forms in tables 11 through 17. Tabulated data for each analyte include the laboratory code number, reported values, analytical method, most probable value (MPV), number of reported values - excluding less than values (N), data range, Z-value, and the F-pseudosigma. (The Z-value is equivalent to the Z-score of traditional statistics, being the number of deviations the reported value is from the MPV. The F-pseudosigma is equivalent to the standard deviation ( $\sigma$ ) of traditional statistics when the data has a Gaussian distribution.) If an analyte has a sufficient number of determinations by a given method, usually 7, the F-pseudosigma for that analytical method is reported in the block of data listed for each analyte.

The median value is considered the MPV. Reported values of "less than" are used to establish the median, but are not considered in determining the data range. The median (midpoint) divides the ordered data into halves and is designated the MPV. The hinges include the middle 50-percent of the data and are the mid-values of the upper and lower halves of the data. (The hinges are similar to quartiles, but are not mathematically equivalent.) The range of data between the upper hinge (Hu) and the lower hinge (Hl), the hinge spread (H-spr), is used to calculate the F-pseudosigma, the laboratory performance rating, the upper warning level (UWL) and lower warning level (LWL), the upper control level (UCL) and the lower control level (LCL). The F-pseudosigma is calculated by comparison of the H-spr value to the Gaussian distribution relation; 67.45 percent of the data "hinges" between plus and minus  $1\sigma$ , resulting in a H-spr of  $2 \times 0.6745 = 1.349\sigma$ . This relation allows the calculation of the F-pseudosigma = (H-spr)/1.349. Laboratories reporting "less than" values are not performance rated unless their reported "less than" values are greater than two Z-values from the MPV.

The graphical plot of the reported data is shown in figure 1. The upper and lower boundaries of the graphical plots generally are +3 and -3 F-pseudosigma deviations from the median. (Computer-program scaling constraints do not permit these boundaries to always be graphed at exactly these values.) The graphical plot is a box plot/control chart with reported values grouped by analytical method in ascending order of value. Lines designate the MPV, Hu, HI, and the (UWL) and (LWL) at +2 and -2 F-pseudosigma, respectively. "Less than" values are not plotted. The analytical data are presented in ways that allow participants to evaluate data distribution, scatter, outliers, central tendency, bias, skewness, and method relationships.



NOTE: vertical scale is the concentration value of the individual analyte in appropriate units (see table 2.) Methods shown are defined in Tables 3 and 11 through 17.

Figure 1.-Statistical parameters shown on reported-data graphs

#### REFERENCE

Hoaglin, D.C., Mosteller, F., and Tukey, J.W., eds., 1983, Understanding Robust and Exploratory Data Analysis: John Wiley and Sons, Inc., 447p.



**Table 4. -Overall laboratory performance ratings for standard reference water samples distributed in October 1995**

[Lab, laboratory number; OWR, overall weighted rating for all sample types; OLR, overall laboratory rating for reported values of a sample type; V/66, number of reported values of 66 total possible values from all sample types; V/28, V/16, V/5, V/5, V/11, V/1 are number of reported values possible for T-137, M-136, N-47, N-48, P-25 and Hg-21 respectively]

Standard reference sample =			T-137		M-136		N-47		N-48		P-25		Hg-21	
Lab	OWR	V/66	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/1
2	1.7	8									1.7	8		
3	2.3	58	2.6	21	2.2	15	2.0	5	3.0	5	1.9	11	2	1
4	3.4	8	3.4	8										
5	3.0	28	3.5	12	2.3	12	4.0	2	3.5	2				
7	2.6	7					2.3	3	2.3	3			4	1
8	2.4	52	2.8	20	2.7	15	2.7	3	1.3	4	1.3	9	3	1
10	3.0	26	3.0	3	3.8	12	2.0	5	2.4	5			1	1
11	2.6	43	2.9	17	2.3	15	1.8	5	3.4	5			2	1
12	2.0	30	2.8	11	1.1	9	2.0	4	1.4	5			4	1
13	2.9	37	3.5	16	2.9	12	1.0	4	2.0	4			3	1
15	2.6	38	2.4	16	2.3	11	3.0	4	2.8	5	4.0	1	4	1
16	2.8	46	3.5	22	2.2	13	2.8	5	1.6	5			0	1
18	3.4	41	3.2	15	3.2	15	4.0	5	3.6	5			4	1
21	3.0	6	3.0	1			3.0	5						
22	1.5	2					1.0	1	2.0	1				
23	2.4	42	2.0	10	2.7	14	3.3	4	3.4	5	1.4	9		
24	3.2	37	3.0	24	3.9	12							0	1
25	1.6	44	1.5	17	1.9	15	0.5	4			2.0	8		
26	3.1	41	3.3	19	3.2	12					2.4	9	3	1
28	1.4	47	1.5	21	1.3	13	0.0	3	0.3	3	2.0	6	4	1
30	3.0	2							3.0	2				
32	2.4	44	3.3	23	1.6	14	1.0	3	1.3	3			1	1
33	3.1	33	3.2	10	3.5	10	1.5	2	3.0	2	2.8	9		
34	3.3	3	3.5	2									3	1
35	4.0	1	4.0	1										
36	1.9	56	1.6	21	1.6	15	2.5	4	2.8	5	2.0	10	4	1
38	3.1	25			2.5	8	3.3	4	3.6	5	3.2	8		
39	2.4	40	2.3	22			3.0	4	1.0	4	2.9	9	4	1
40	3.1	34	2.9	19	3.4	13			3.5	2				
42	3.3	41	3.7	22	2.6	13	4.0	2	3.7	3			0	1
43	3.5	17	3.6	7	3.5	10								
46	3.5	46	3.4	18	3.7	11	3.8	5	3.2	5	3.7	6	4	1
48	2.3	51	2.8	20	2.0	11	1.8	5	2.2	5	2.0	9	4	1
50	3.0	26	3.1	13	2.9	12							3	1
53	1.3	6					1.3	3	1.3	3				
54	3.0	16	2.5	6	3.3	10								
55	3.0	17			2.1	6	3.4	5	3.4	5			4	1
56	1.7	16			1.5	8	1.8	4	2.0	4				
57	1.5	22			2.1	13	0.8	4	0.4	5				
58	2.0	32	1.9	10	2.2	9			1.3	4	2.0	8	3	1
59	2.8	49	3.1	19	2.5	14	2.4	5	3.0	5	2.8	6		
60	2.9	12	4.0	2	4.0	2	3.0	3	2.7	3	0.0	1	2	1
61	1.8	47	2.0	22	1.3	14	2.2	5	2.4	5			1	1
64	3.4	29	3.6	5	2.7	8	3.5	4	3.8	4	3.7	8		
68	2.6	42	2.2	25	3.6	12	2.3	4					4	1
69	3.2	28	2.9	15	3.4	10	3.0	1	4.0	1			4	1
70	3.0	41	3.3	16	3.3	14	1.8	5	2.8	5			1	1
72	1.7	29	0.8	13	2.6	6	1.8	5	3.0	5				
73	2.4	11	2.4	11										
75	3.2	30	3.2	17	3.5	10	0.0	1	3.0	1			4	1
76	3.5	16	3.6	7	3.4	6	4.0	1	4.0	1			3	1
80	1.9	21	1.7	7	2.2	11			1.3	3				
81	2.8	50	2.7	18	3.3	11	2.2	5	3.4	5	2.7	10	2	1
83	2.5	30	3.0	12	2.1	10	2.5	4	1.8	4				
84	3.2	15	2.5	4	3.8	7	2.0	2	3.5	2				
85	3.3	42	2.9	18	3.6	14	3.8	5	3.4	5				
86	2.6	40	2.9	22	2.1	11	2.3	3	3.0	3			0	1
87	2.5	36	2.4	14	2.6	11	2.8	5	2.4	5			0	1
88	0.5	6					1.0	3	0.0	3				
89	3.1	54	2.7	19	3.2	13	3.8	5	3.0	5	3.3	11	3	1
90	2.5	24	1.7	10	2.2	4	3.2	5	3.4	5				
91	3.8	10	4.0	2			3.8	4	3.8	4				
93	2.3	14	2.5	2	1.3	4	3.0	1	4.0	1	2.6	6		
96	3.2	27	3.0	11	3.8	5	2.6	5	3.6	5			4	1
97	3.1	46	3.2	21	3.0	14	3.0	5	3.0	5			2	1
100	2.0	42	2.2	20	2.1	7	1.3	3	2.2	5	2.0	6	1	1
101	2.3	26	2.3	12	2.6	7					2.2	7		
102	2.3	52	2.8	22	1.5	11	3.0	5	2.8	5	1.2	9		
104	2.6	11	0.0	1			3.2	5	2.6	5				
105	2.8	53	2.8	19	2.2	13	2.0	5	2.6	5	3.9	10	3	1

Table 4. -Overall laboratory performance ratings for standard reference water samples distributed in October 1995--Continued

Standard reference sample =			T-137		M-136		N-47		N-48		P-25		Hg-21	
Lab	OWR	V/66	OLR	V/28	OLR	V/16	OLR	V/5	OLR	V/5	OLR	V/11	OLR	V/1
107	2.9	41	2.9	15	2.5	10	3.8	4	3.5	4	2.6	8		
109	3.0	24	3.0	12	2.9	11							3	1
110	3.3	14	2.6	5							3.8	9		
111	2.7	31	2.6	5	2.4	9	2.5	4	2.8	4	3.6	8	0	1
113	2.8	48	2.9	18	2.8	12	3.0	3	3.8	4	2.1	10	2	1
114	2.0	31	2.0	14	1.8	11	3.0	3	2.0	3				
116	2.8	23	3.0	9	2.4	11					3.3	3		
118	2.3	24	2.0	8	2.2	5	2.2	5	2.6	5			4	1
119	3.2	43	3.1	19	3.3	13	3.2	5	3.4	5			4	1
120	2.7	35	2.8	18	2.3	9	2.2	5	4.0	2			4	1
121	2.8	27	2.7	22			3.2	5						
122	2.9	25	3.3	4	3.0	11	3.0	5	2.4	5				
126	2.8	5	2.5	4			4.0	1						
128	2.5	42	2.6	20	2.5	11	3.0	5	2.4	5			1	1
129	2.3	31	2.0	8	2.7	13	1.6	5	2.4	5				
130	1.0	25	1.1	18	0.8	7								
133	2.6	13	1.8	8	4.0	2	4.0	1	4.0	1			4	1
134	3.4	56	3.5	20	3.3	15	3.0	5	3.8	5	3.5	10	4	1
138	3.5	55	3.4	21	3.5	14	4.0	5	3.8	5	3.6	9	2	1
140	2.5	44	2.8	13	3.1	11	1.2	5	1.8	5	2.3	10		
141	2.7	49	2.4	17	2.9	13	3.5	4	2.6	5	2.8	9	2	1
142	2.7	52	2.9	27	2.1	14	2.8	5	2.8	5			3	1
143	3.5	15			2.0	3	3.8	4	3.8	4	4.0	4		
144	2.8	6	2.8	5									3	1
145	2.5	54	2.4	20	2.7	13	3.0	5	3.0	5	2.1	10	3	1
146	3.0	43	3.4	16	2.7	11	3.0	3	3.3	3	2.3	9	4	1
149	2.9	35	2.6	19	3.2	13	2.0	2					4	1
153	2.9	10			2.9	10								
158	3.0	32	3.1	15	3.4	7	2.0	5	2.8	5				
180	3.1	47	2.6	16	3.3	12	3.6	5	3.8	5	2.9	9		
183	2.0	7			1.0	3	2.5	2	3.0	2				
185	2.5	4					3.0	2	2.0	2				
190	2.7	46	2.9	14	3.4	12	2.2	5	1.4	5	2.4	10		
191	3.3	34	3.5	20	3.4	11	0.0	1	2.0	2				
193	2.7	16	2.7	10	3.3	2	1.5	2	3.5	2				
196	3.3	43	3.7	24	2.9	8	3.0	1			2.8	10		
197	3.8	5					3.5	2			4.0	3		
198	3.1	14	3.1	13									4	1
203	2.9	33	2.2	13	2.9	6	3.8	5	2.8	5	4.0	3	4	1
204	3.1	26	2.9	12	2.8	5	3.5	4	3.0	2	4.0	3		
208	1.8	5			1.7	3			2.0	2				
211	2.2	46	2.0	21	2.3	14	2.4	5	2.8	5			0	1
212	2.4	48	2.3	22	2.8	15	1.2	5	2.4	5			3	1
213	3.0	21	2.7	10	3.3	4	3.0	4	3.5	2			3	1
217	3.1	35	3.6	16	2.6	14	2.8	5						
218	2.5	8	2.3	3	2.7	5								
219	2.7	31	2.4	22	3.5	9								
221	2.8	39	3.7	18	3.0	7	1.2	5	2.2	5	2.0	3	1	1
224	1.5	50	1.4	17	1.9	12	0.0	5	0.0	5	2.7	11		
226	3.2	12			3.0	8	3.5	4						
228	2.3	8									2.3	8		
231	2.4	29	3.1	14	2.4	8	1.0	3	0.3	3			2	1
234	3.3	50	3.3	26	3.7	15	2.0	4	3.5	4			4	1
235	3.5	17	3.4	16									4	1
236	1.3	32	1.0	18	1.5	15								
237	2.9	7					2.0	1			3.0	6		
238	3.0	6									3.0	6		
240	2.0	8					3.0	4	1.0	4				
241	2.1	51	2.0	20	2.5	12	2.8	5	1.8	5	1.3	9		
244	2.9	5			3.7	2					2.4	3		
245	4.0	1											4	1
247	2.7	51	3.3	22	2.5	13	0.8	5			2.4	10	3	1

**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

		Analyte = Ag (Silver)				Al (Aluminium)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)		Ca (Calcium)	
		MPV =		0.3	µg/L	30.5	µg/L	0.6	µg/L	15.6	µg/L	65.0	µg/L	5.2	µg/L	38.1	mg/L
		F-pseudosigma =		1.5		6.9		1.0		4.2		4.8		0.5		1.5	
Lab	OLR	V/28	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	
3	2.6	21	<10	NR	31.0	4	<10	NR	<50	NR	65.5	4	5.7	3	39.2	3	
4	3.4	8									70.0	2			38.5	4	
5	3.5	12	<4	NR			<70	NR	15.6	4	62.2	3	5.0	4	36.4	2	
8	2.8	20	<5	NR	51.0	0	0.3	4	<50	NR	65.0	4	5.5	3	37.4	4	
10	3.0	3															
11	2.9	17							17.0	4	65.0	4	6.0	1	39.8	2	
12	2.8	11	3.8	0											38.0	4	
13	3.5	16	<10	NR	28.0	4	<5	NR			67.6	3	4.9	3	39.7	2	
15	2.4	16			26.6	3					65.7	4	3.9	0	3.5	0	
16	3.5	22	<2	NR	23.0	2	<2	NR	<500	NR	66.0	4	5.4	4	38.0	4	
18	3.2	15	<3	NR	<100	NR	<1	NR	<10	NR	60.0	2	5.0	4	37.1	3	
21	3.0	1															
23	2.0	10	<0.2	NR			<10	NR					6.4	0			
24	3.0	24	0.7	4					12.2	3	61.9	3	6.0	1	37.9	4	
25	1.5	17	<6	NR	<19	NR	<50	NR	<23	NR	64.0	4	<2.4	0	41.7	0	
26	3.3	19	<0.2	NR			<0.7	NR	12.3	3	64.0	4	4.8	3	38.8	4	
28	1.5	21			67.1	0	1.7	2	41.5	0	67.4	4			38.9	3	
32	3.3	23	<0.1	NR	32.0	4	<0.1	NR			67.5	3	6.0	1	38.0	4	
33	3.2	10			70.0	0					70.0	2			38.6	4	
34	3.5	2					0.1	4									
35	4.0	1															
36	1.6	21	0.3	4	<200	NR	<1	NR	107.0	0	123.0	0	6.7	0	36.0	2	
39	2.3	22			38.6	2			13.0	3	68.7	3	6.3	0	38.8	4	
40	2.9	19			30.8	4			14.7	4	66.7	4	5.2	4			
42	3.7	22			30.3	4			14.0	4	64.5	4	5.7	3	38.8	4	
43	3.6	7													38.0	4	
46	3.4	18			41.7	1					67.4	4	5.1	4	38.5	4	
48	2.8	20	<0.2	NR	32.9	4	<1	NR	<5	0	93.9	0	5.2	4	37.6	4	
50	3.1	13	<1	NR	26.4	3	<1	NR			51.3	0					
54	2.5	6													36.2	2	
58	1.9	10	2.8	1			4.6	0							33.2	0	
59	3.1	19	<5	NR	30.0	4	<5	NR			64.0	4	5.0	4	36.0	2	
60	4.0	2															
61	2.0	22			182.0	0			10.6	2	70.4	2	5.2	4	39.8	2	
64	3.6	5													38.8	4	
68	2.2	25	0.5	4	25.0	3	2.6	1	4.4	0	65.0	4	5.7	3	37.0	3	
69	2.9	15	<1	NR	27.5	4	<5	NR					4.7	3	37.1	3	
70	3.3	16	<5	NR	<100	NR	<5	NR	<50	NR	63.1	4	5.0	4	38.8	4	
72	0.8	13			71.5	0	<1	NR			93.6	0	14.1	0			
73	2.4	11	2.2	2	27.7	4	9.1	0									
75	3.2	17			28.0	4			17.8	3	62.2	3	5.1	4	36.7	3	
76	3.6	7										5.3	4				
80	1.7	7					<1	NR									
81	2.7	18	<2	NR	<56	NR	<2	NR			66.0	4	5.0	4	39.2	3	
83	3.0	12									60.0	2	5.0	4	36.1	2	
84	2.5	4													36.8	3	
85	2.9	18	<5	NR	<100	NR	<2	NR	16.0	4	62.4	3	5.2	4	37.9	4	
86	2.9	22	5.4	0	44.4	1	0.2	4	15.7	4	67.1	4	5.0	4	39.9	2	
87	2.4	14	<2	NR			<2	NR			56.8	1			37.4	4	
89	2.7	19	<2	NR	23.3	2	<2	NR			74.9	1	5.2	4	37.4	4	
90	1.7	10									82.0	0					
91	4.0	2															
93	2.5	2													34.9	1	
96	3.0	11	<1	NR			<1	NR			62.0	3	5.0	4			
97	3.2	21	<0.43	NR	30.1	4	<0.14	NR			55.0	0	6.1	1	38.5	4	
100	2.2	20	<0.05	NR	<40	NR	<2	NR	46.5	0	62.2	3	4.8	3	39.8	2	
101	2.3	12													76.0	0	
102	2.8	22	<1	NR	36.0	3	3.0	0			67.0	4	5.0	4	38.6	4	
104	0.0	1															
105	2.8	19	<2	NR	25.3	3	<4	NR			61.0	3	4.8	3	35.8	2	



**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

		Analyte = Ag (Silver)		Al (Aluminium)		As (Arsenic)		B (Boron)		Ba (Barium)		Be (Beryllium)		Ca (Calcium)	
		MPV =	0.3 µg/L	RV	30.5 µg/L	RV	0.6 µg/L	RV	15.6 µg/L	RV	65.0 µg/L	RV	5.2 µg/L	RV	38.1 mg/L
		F-pseudosigma =	1.5	Rating	6.9	Rating	1.0	Rating	4.2	Rating	4.8	Rating	0.5	Rating	1.5
Lab	OLR	V/28													
107	2.9	15	<1	NR	27.0	3	<5	NR			69.0	3			36.4
109	3.0	12					0.2	4							35.8
110	2.6	5													38.2
111	2.6	5													40.6
113	2.9	18	<1	NR	33.6	4	<1.5	NR			60.1	2	5.3	4	38.2
114	2.0	14	4.0	0									5.0	4	24.0
116	3.0	9							<20	NR	68.0	3			39.9
118	2.0	8	<1	NR			<4	NR							
119	3.1	19	<5	NR	32.7	4	<3	NR	10.0	2	66.0	4	4.4	1	37.9
120	2.8	18	0.3	4	41.6	1	0.4	4					4.7	3	30.7
121	2.7	22	0.1	4	30.0	4	1.0	4			62.0	3			38.8
122	3.3	4													37.5
126	2.5	4					<10	NR			<200	NR			
128	2.6	20	<1	NR	24.4	3	<1	NR	<10	NR	59.0	2	4.7	3	41.1
129	2.0	8							72.0	0					43.0
130	1.1	18			69.8	0			0.0	0	69.4	3			40.4
133	1.8	8	<6	NR			<5	NR			58.8	2	5.0	4	35.6
134	3.5	20			31.2	4			15.6	4	62.0	3	5.3	4	38.1
138	3.4	21	<0.05	NR	29.0	4	<2	NR			63.3	4	5.0	4	37.6
140	2.8	13													36.5
141	2.4	17	<0.5	NR	37.0	3	<5	NR	<10	NR	68.0	3	6.7	0	38.4
142	2.9	27			19.6	1	0.3	4	14.9	4	65.1	4	5.5	3	42.7
144	2.8	5	<0.2	NR			<0.2	NR							
145	2.4	20			16.4	0	<5.9	NR	8.2	1	64.3	4	4.9	3	38.9
146	3.4	16	<10	NR	<200	NR	<10	NR			62.9	4	5.5	4	34.9
149	2.6	19	<0.1	NR	20.0	1	<1	NR			70.0	2	5.9	2	38.2
158	3.1	15			36.0	3			19.5	3	64.0	4	5.2	4	38.0
180	2.6	16	<5.3	NR	<40.6	NR	<37.1	NR	29.7	0	62.5	3	5.1	4	37.2
190	2.9	14			24.7	3									38.3
191	3.5	20			29.0	4	0.4	4			67.0	4			38.8
193	2.7	10	<5	NR			<5	NR			70.0	2			35.2
196	3.7	24	0.0	nr	30.9	4	0.5	4			64.3	4	5.5	3	36.8
198	3.1	13			27.6	4					65.7	4	5.0	4	39.8
203	2.2	13	<1	NR	28.0	4	<5	NR			73.4	1			38.5
204	2.9	12			33.0	4	<5	NR			70.5	2			38.6
211	2.0	21	<0.7	NR	<100	NR	<2	NR	16.0	4	65.0	4	5.7	3	45.0
212	2.3	22	0.2	4	37.0	3	1.1	3	20.0	2	69.0	3	5.7	3	39.3
213	2.7	10	0.2	4			<0.8	NR					5.6	3	
217	3.6	16									65.0	4	5.0	4	37.6
218	2.3	3													40.8
219	2.4	22	<0.1	NR	22.0	2	<1	NR	18.0	3	61.0	3	6.0	1	37.0
221	3.7	18	0.5	4	31.0	4	0.6	4							38.0
224	1.3	18			39.9	2	3.3	0			30.3	0	8.3	0	35.1
231	3.1	14	<1	NR			<1	NR			73.5	1			36.0
234	3.3	26	<0.2	NR	30.3	4	0.7	4	14.6	4	63.5	4	5.1	4	38.2
235	3.4	16	0.1	4	39.0	2	0.6	4			70.0	2	5.0	4	
236	1.0	18	0.0	NR	23.0	2	0.0	NR	0.0	NR	54.0	0	0.0	0	36.7
241	2.0	20	0.1	4	30.5	4	0.1	4			69.0	3	5.5	3	40.0
247	3.3	22	<1	NR	33.0	4	<1	NR	15.0	4	66.0	4	5.4	4	39.2

**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =	Cd (Cadmium)		Co (Cobalt)		Cr (Chromium)		Cu (Copper)		Fe (Iron)		K (Potassium)		Li (Lithium)	
MPV =	6.80	µg/L	0.4	µg/L	19.4	µg/L	1.9	µg/L	71	µg/L	1.19	mg/L	8.7	µg/L
F-pseudosigma =	0.52		0.5		2.0		1.2		9		0.13		1.5	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	6.60	4	< 5	NR	17.8	3	< 5	NR	65	3	1.25	4	21.2	0
4							< 20	NR	64	3				
5			< 3	NR	19.4	4	< 5	NR	67	4	< 1	NR		
8	7.90	0	< 10	NR	21.0	3	< 5	NR	69	4	1.40	1	< 10	NR
10									76	3				
11					20.0	4			63	3	0.94	1		
12					20.0	4	2.0	4	65	3	1.00	1		
13	7.10	3	< 50	NR	21.9	2	< 20	NR	67	4	1.21	4		
15	8.20	0			17.3	2					1.18	4		
16	7.30	3	< 2	NR	19.0	4	2.0	4	79	3	1.20	4	8.0	4
18	7.05	4	< 10	NR	15.7	1	< 5	NR	69	4	< 1	NR		
21									79	3				
23	6.33	3			17.8	3	4.1	1	< 500	NR				
24	6.00	1	1.1	2	16.4	2	1.8	4	70	4	1.10	3	18.4	0
25	< 6	NR	< 12	NR	23.0	1	< 7	NR	63	3	1.42	1	10.0	3
26	6.87	4			20.2	4	1.4	4	60	2	1.30	3	8.7	4
28	6.93	4			35.3	0	8.3	0	92	0	1.78	0		
32	6.90	4	< 0.2	NR	20.0	4	1.8	4	185	0	1.27	3	8.0	4
33									70	4	1.18	4		
34														
35									71	4				
36	6.50	3	< 10	NR	18.0	3	2.2	4	86	1	939	0		
39	7.40	2			23.0	1	3.5	2	64	3			6.8	2
40	7.60	1			20.7	3			74	4	1.34	2	9.0	4
42	6.80	4			19.0	4	1.8	4	75	4	1.16	4	10.0	3
43									73	4	1.10	3		
46	6.52	3			19.9	4	1.8	4	66	3	1.17	4		
48	6.80	4	< 50	NR	21.0	3	1.7	4	100	0	1.26	3		
50	6.80	4			19.3	4	1.4	4	70	4				
54									89	0	1.30	3		
58	6.70	4			20.7	3	1.4	4			1.33	2		
59	7.00	4	< 5	NR	18.0	3	< 5	NR	65	3	1.00	1		
60														
61	8.59	0	1.5	0	19.4	4			66	3	3.74	0		
64											1.19	4		
68	6.70	4	< 5	NR	12.0	0	3.9	1	53	1	0.44	0	5.7	1
69	7.68	1			20.2	4	< 5	NR	61	2	1.16	4	< 50	NR
70	6.53	3	< 50	NR	17.5	3	< 10	NR	56	1	1.22	4		
72	5.20	0			25.1	0			118	0				
73	7.70	1			21.1	3	4.3	1	71	4				
75	7.98	0	< 5	NR	17.4	3	< 4	NR	69	4	1.14	4	9.4	4
76	6.48	3			19.1	4								
80	< 4	0					1.0	3	61	2				
81	6.00	1	< 13	NR	21.0	3	1.0	3	27	0	1.26	3		
83					18.0	3			69	4	1.15	4		
84														
85	7.80	1	< 10	NR	19.8	4	< 5	NR	75	4	1.27	3	9.2	4
86	6.68	4			17.4	3	3.2	2	59	2	1.18	4		
87	9.00	0			20.8	3	< 5	NR	70	4	1.04	2		
89	6.27	2	< 5	NR	19.9	4	< 5	NR	64	3	1.08	3		
90	6.20	2			32.0	0	3.0	3	102	0				
91									68	4				
93														
96	6.60	4			20.1	4	2.1	4	90	0				
97	6.38	3	< 0.12	NR	19.7	4	1.8	4	63	3	1.15	4		
100	6.80	4	< 10	NR	14.5	0	< 5	NR	84	2	1.10	3	11.0	1
101	7.10	3			26.5	0	6.3	0	79	3	1.25	4		
102	6.90	4	0.7	3	17.9	3	0.3	2	73	4	1.11	3		
104														
105	6.40	3	< 1	NR	17.8	3	< 6	NR	76	3	1.34	2	< 25	NR

**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Cd (Cadmium)			Co (Cobalt)			Cr (Chromium)			Cu (Copper)			Fe (Iron)			K (Potassium)			Li (Lithium)		
MPV =	6.80	µg/L	0.4	µg/L		19.4	µg/L		1.9	µg/L		71	µg/L		1.19	mg/L		8.7	µg/L	
F-pseudosigma =	0.52		0.5			2.0			1.2			9			0.13			1.5		
Lab	RV	Rating	RV	Rating		RV	Rating		RV	Rating		RV	Rating		RV	Rating		RV	Rating	
107	6.98	4				19.5	4		1.1	3		60	2		1.20	4				
109												67	4		1.20	4		8.5	4	
110															1.19	4				
111															1.29	3				
113	4.35	0				18.6	4					72	4		1.55	0				
114	7.00	4				20.0	4					77	3		1.00	1				
116												73	4							
118	6.80	4				25.7	0		< 2	NR		102	0							
119	7.00	4				20.3	4		< 1	NR		65	3		1.50	0				
120	7.04	4				18.4	4		0.5	2					1.06	2				
121	7.70	1	0.4	4					2.3	4		84	1					10.3	2	
122															1.27	3				
126	6.90	4																		
128	6.60	4	< 10	NR		17.4	3		1.7	4		59	2		< 0.3	0				
129												70	4		1.00	1				
130	13.60	0				36.3	0		16.6	0		74	4		1.30	3		1.0	0	
133	6.60	4							< 5	NR		120	0							
134	7.08	3				18.6	4		1.7	4		70	4		1.21	4		9.7	3	
138	7.20	3	< 1	NR		18.5	4		1.6	4		71	4		1.10	3				
140	7.00	4				21.0	3		4.0	1		78	3		1.36	2				
141	6.40	3	< 5	NR		20.0	4		< 5	NR		50	0		1.24	4				
142	7.09	3	0.4	4		19.0	4		2.0	4		78	3		1.20	4		9.8	3	
144	7.17	3				21.9	2													
145	6.00	1	< 1.3	NR		18.3	3		< 1.8	NR		70	4		0.97	1		4.9	0	
146	6.63	4	< 10	NR		18.9	4		< 25	NR		77	3		1.04	2				
149	5.90	1				24.0	0		< 5	NR		64	3		1.30	3		8.0	4	
158	4.60	0				18.0	3					63	3							
180	5.90	1	< 3.6	NR		20.5	3		< 3.8	NR		73	4		1.60	0				
190	8.57	0				19.5	4		1.0	3		75	3		1.16	4				
191	7.30	3	0.2	4		17.9	3		1.8	4		70	4		1.23	4				
193	7.00	4	< 25	NR		18.6	4		< 25	NR		72	4		1.19	4				
196	6.67	4	0.2	4		18.2	3		1.9	4					1.19	4		8.5	4	
198	5.20	0										73	4		1.10	3				
203	6.16	2				16.7	2		< 2	NR		75	4		1.12	3				
204						21.8	2		1.0	3		80	2		1.11	3				
211	7.30	3	< 2	NR		15.8	1		< 2	NR		65	3		1.64	0				
212	< 5	0	< 40	NR		19.0	4		< 30	NR		86	1		1.20	4		11.0	1	
213	9.90	0	< 0.7	NR		17.7	3		1.4	4		72	4							
217	6.00	1				21.0	3													
218																				
219	7.00	4	< 0.5	NR		16.0	1		2.0	4		97	0		1.24	4		7.0	2	
221	6.55	4	0.5	4		19.9	4		2.0	4		76	3		1.16	4				
224	5.40	0	2.5	0					6.5	0		105	0		1.17	4				
231	6.38	3				18.8	4		2.2	4		72	4		1.04	2				
234	6.72	4	0.3	4		22.6	1		3.1	2		68	4		1.14	4		9.9	3	
235	6.50	3				18.9	4		1.9	4		63	3							
236	0.00	0	0.0	NR		9.0	0		0.0	NR		86	1		1.03	2		0.0	0	
241	7.10	3							4.7	0		69	4		1.40	1				
247	7.20	3	< 1	NR		20.0	4		1.2	3		61	2		1.18	4		8.0	4	



Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Mg (Magnesium)			Mn (Manganese)		Mo (Molybdenum)		Na (Sodium)		Ni (Nickel)		Pb (Lead)		Sb (Antimony)	
MPV =	10.1	mg/L	98	µg/L	8.9	µg/L	22.0	mg/L	15.0	µg/L	6.3	µg/L	15.5	µg/L
F-pseudosigma =	0.5		5		1.8		1.1		2.5		1.0		2.7	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	10.7	2	104	2	8.0	4	24.8	0	12.5	3	9.3	0	14.0	3
4	10.1	4	102	3			22.2	4			< 400	NR		
5	9.6	2	96	4	< 10	NR	21.4	3			< 30	NR		
8	10.2	4	99	4	10.0	3	22.0	4	14.0	4	< 50	NR	13.0	3
10			101	3										
11	10.1	4	100	4	10.0	3	21.5	4	16.0	4	8.6	0	20.0	1
12	10.5	3	100	4			22.0	4	30.0	0				
13	10.1	4	99	4			22.1	4	< 20	NR	6.0	4	14.8	4
15	9.6	3	97	4			22.1	4	16.3	3	6.4	4	12.8	3
16	10.0	4	98	4	9.3	4	21.0	3	18.0	2	6.5	4	16.0	4
18	9.9	4	97	4	< 20	NR	21.5	4	< 25	NR	5.8	3	13.4	3
21														
23	9.6	2	89	1	< 100	NR			< 20	NR	5.3	2	16.0	4
24	10.0	4	96	4			21.5	4	17.4	3	7.4	2	13.0	3
25	11.2	0	106	2			24.1	1	< 49	NR	4.6	1	13.3	3
26	10.4	3	98	4	7.4	3	21.8	4	15.4	4	5.7	3	21.6	0
28	10.6	2	94	3	11.1	2	17.3	0	19.0	1	23.5	0		
32	10.0	4	101	3	9.3	4	23.5	2	14.0	4	6.3	4	15.7	4
33	10.1	4	100	4			22.5	4						
34														
35														
36	10.0	4	9	0	< 20	NR	22.0	4	12.6	3	5.6	3	18.6	2
39	10.8	2	105	2	9.5	4	23.9	1	16.0	4			17.0	3
40	10.7	2	100	4	10.0	3	22.8	3	20.0	1	18.0	0	17.4	3
42	10.6	2	99	4	8.8	4	22.2	4	15.0	4	6.6	4	16.3	4
43	10.0	4	102	3			23.0	3						
46	10.3	4	98	4			22.8	3	20.6	0	5.8	3	15.0	4
48	9.8	3	100	4	9.7	4	21.6	4	15.0	4	8.4	0	12.6	2
50			94	3	7.4	3			12.5	3	5.3	2		
54	9.7	3	101	3			21.7	4						
58							20.0	1			6.0	4		
59	9.7	3	95	3	9.0	4	20.0	1	15.0	4	5.5	3	16.5	4
60									13.8	4	6.6	4		
61	11.0	1	102	3	3.9	0	19.4	0	16.6	3	5.5	3	14.7	4
64	9.9	4					21.4	3						
68	9.6	2	95	3	14.0	0	21.0	3	16.0	4	6.9	3	8.5	0
69	9.8	3	85	0			21.1	3	14.7	4	6.0	4	16.4	4
70	10.2	4	97	4	< 50	NR	21.9	4	< 50	NR	5.4	3	15.4	4
72			142	0	1.6	0			18.4	2	5.0	2	15.0	4
73			103	3					15.0	4				
75	9.9	4	97	4	< 10	NR	22.3	4	< 20	NR	6.5	4	11.0	1
76			100	4					14.4	4	5.3	2	14.5	4
80			87	1							6.0	4		
81	10.7	2	102	3	10.0	3	23.4	2	15.0	4	6.0	4	< 28	NR
83	9.7	3	94	3			20.7	2			6.7	4		
84	10.0	4					18.4	0			7.2	3		
85	10.3	4	95	3	< 20	NR	22.4	4	16.3	3	< 50	NR	45.0	0
86	10.7	2	99	4	18.6	0	22.9	3	15.8	4	6.2	4		
87	9.6	2	87	1	7.0	2	21.7	4	15.0	4	9.6	0		
89	9.9	3	114	0			21.8	4	16.1	4	5.2	2	15.3	4
90			97	4			21.8	4	12.0	2	15.0	0		
91			98	4										
93	10.3	4												
96			91	2					15.0	4	5.7	3	13.1	3
97	10.0	4	102	3	10.0	3	22.0	4	12.6	3	7.1	3	18.2	3
100	10.8	2	102	3	< 50	NR	22.6	3	18.5	2	7.6	2	19.0	2
101	10.0	4	94	3			22.0	4	18.1	2	19.0	0		
102	10.9	1	97	4			22.9	3	16.5	3	9.9	0	11.8	2
104														
105	9.3	1	93	3	9.2	4	20.7	2	15.8	4	5.8	3	15.0	4

**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = Mg (Magnesium)			Mn (Manganese)			Mo (Molybdenum)			Na (Sodium)			Ni (Nickel)			Pb (Lead)			Sb (Antimony)		
MPV =	10.1	mg/L	98	µg/L		8.9	µg/L		22.0	mg/L		15.0	µg/L		6.3	µg/L		15.5	µg/L	
F-pseudosigma =	0.5		5			1.8			1.1			2.5			1.0			2.7		
Lab	RV	Rating	RV	Rating		RV	Rating		RV	Rating		RV	Rating		RV	Rating		RV	Rating	
107	11.7	0	90	2					21.1	3		14.4	4		5.1	2				
109	10.0	4	100	4		8.0	3		20.0	1					5.3	2				
110	9.5	2							20.6	2										
111	10.6	2							22.7	3										
113	10.2	4	98	4					20.7	2		16.4	3		7.3	2		15.8	4	
114	8.8	0	100	4					10.0	0		12.5	3					88.0	0	
116	10.5	3	103	3					22.7	3										
118			93	3								12.4	2		4.9	2				
119	10.3	4	100	4		5.5	1		22.2	4		13.5	3		6.9	3		16.0	4	
120	9.2	1	106	1		9.7	4		20.5	2		13.5	3		6.6	4		14.3	4	
121	10.1	4	109	1		4.0	0		22.0	4		21.3	0		5.9	4				
122	10.4	3							21.3	3										
126			107	1											8.0	1		15.5	4	
128	9.2	1	88	1		< 10	NR		24.1	1		13.9	4		6.3	4		15.8	4	
129	11.0	1	90	2					22.0	4										
130	10.9	1	89	1					24.0	1		42.0	0		24.4	0				
133	9.3	1										22.3	0		< 20	NR				
134	10.1	4	103	3		8.5	4		20.0	1		15.5	4		6.1	4				
138	10.1	4	95	3		8.3	4		22.1	4		13.4	3		5.2	2		13.3	3	
140	10.0	4	89	1					22.5	4		21.0	0		6.0	4				
141	10.6	2	97	4		< 10	NR		23.0	3		23.0	0		8.2	1		< 50	NR	
142	11.6	0	114	0		9.4	4		23.0	3		15.5	4		5.7	3		17.6	3	
144												14.6	4		5.0	2				
145	10.2	4	99	4		5.0	0		22.2	4		13.0	3		49.6	0				
146	9.7	3	96	4		8.1	4		21.0	3		15.7	4		6.3	4		< 50	NR	
149	10.0	4	105	2		9.0	4		23.0	3		15.0	4		6.0	4		1.4	0	
158	10.4	3	99	4					19.8	1		17.0	3		5.9	4				
180	10.1	4	98	4		8.7	4		21.6	4		18.6	2		< 27.2	NR		< 31.4	NR	
190	9.9	4	104	2					23.0	3		14.8	4		6.7	4				
191	10.7	2	103	3					22.5	4		14.9	4		5.8	3				
193	9.8	3							20.6	2					7.0	3				
196	10.3	4	102	3		8.7	4		23.0	3		15.6	4		6.4	4		15.6	4	
198	10.4	3	98	4					20.5	2					6.5	4		17.0	3	
203	9.6	2	92	2					20.7	2		< 20	NR		4.8	1				
204	9.1	1	100	4					21.3	3										
211	10.7	2	97	4		32.0	0		22.0	4		47.0	0		6.0	4		21.0	1	
212	10.7	2	110	0		< 40	NR		23.4	2		6.4	0		< 20	NR		13.0	3	
213												14.9	4		5.8	3				
217	10.1	4	100	4					21.8	4					6.8	3		18.0	3	
218	10.3	4																		
219	9.0	0	83	0		8.0	4		23.0	3		14.0	4		5.0	2		20.0	1	
221	9.7	3	91	2		9.5	4		21.8	4		17.4	3		6.3	4				
224	10.2	4	95	4		0.0	0		20.3	2		18.1	2		8.4	0				
231	10.1	4	93	3					21.6	4		12.4	2		6.4	4				
234	10.0	4	96	4		10.9	2		21.3	3		15.0	4		6.0	4		18.9	2	
235												14.0	4		6.8	3		13.7	3	
236	10.3	3	84	0		0.0	0		21.7	4		8.0	0		12.0	0		0.0	0	
241	10.0	4	81	0		5.2	1		25.6	0		15.2	4		2.6	0		11.0	1	
247	10.6	2	103	3		9.7	4		22.6	3		19.9	1		6.7	4		16.8	4	

**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Se (Selenium)			SiO2 (Silica)		Sr (Strontium)		Th (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV = 1.3 µg/L			6.96 mg/L		230 µg/L		162 µg/L		10.0 µg/L		14.0 µg/L		49.5 µg/L	
F-pseudosigma = 1.4			0.56		14		23		0.5		1.6		4.2	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	< 5	NR	7.53	2	246	2	178	3			16.8	1	49.5	4
4			7.20	4	240	3							< 200	NR
5	< 30	NR	6.72	4	230	4							47.9	4
8	< 0.1	NR	3.80	0	227	4	179	3			15.0	3	31.0	0
10													53.0	3
11							188	2			14.0	4	50.0	4
12													50.0	4
13	< 5	NR	7.05	4			158	4			< 50	NR	46.7	3
15							201	1			7.5	0	46.3	3
16	< 10	NR			210	2	174	3	10.0	4	14.0	4	47.0	3
18	< 1	NR			219	3	165	4			11.5	1	47.7	4
21														
23							40	0					48.1	4
24	1.5	4	6.73	4	230	4	133	2			13.1	3	46.8	3
25	< 5	NR	9.26	0	239	3	243	0			15.0	3	< 4	0
26	< 0.8	NR									13.4	4	47.0	3
28	2.5	3	5.69	0	223	4					18.1	0	48.5	4
32			7.00	4	232	4	173	4	5.5	0	14.8	4	46.9	3
33			6.63	3	241	3								
34	0.2	3												
35														
36	< 2	NR	15.00	0	837	0	218	0			53.2	0	57.7	1
39	1.7	4	7.48	3	249	2	251	0			16.6	1	54.5	2
40					222	3	172	4			14.9	3		
42			7.30	3	235	4					13.0	3	50.0	4
43			7.00	4										
46							157	4			13.4	4	49.0	4
48	< 2	NR					154	4			13.3	4	20.0	0
50	< 1	NR					181	3			13.4	4	52.9	3
54														
58													110.0	0
59	< 5	NR			210	2	150	4			11.6	2	48.8	4
60														
61	3.0	2	3.33	0			147	3			14.4	4	51.2	4
64			6.57	3										
68	0.9	4			220	3	151	4			10.0	0	52.0	3
69	< 5	NR					156	4					58.0	1
70	< 5	NR	6.47	3	230	4	90	0			< 50	NR	50.4	4
72							184	3					142.4	0
73	7.4	0											49.7	4
75	< 1	NR									12.7	3	53.4	3
76														
80	3.0	2											60.0	0
81	1.0	4			240	3					15.0	3	< 1	0
83			6.38	2									47.0	3
84														
85	5.9	0			237	4	223	0			< 20	NR	49.8	4
86					235	4	182	3			16.6	1	49.5	4
87	< 2	NR	7.28	3									49.3	4
89	2.0	3	6.84	4			102	0			12.9	3	56.7	1
90													44.0	2
91														
93														
96	< 1	NR											54.0	2
97	0.0	NR	7.09	4	215	2	176	3			14.1	4	48.4	4
100	< 200	NR	7.65	2	201	0	160	4			10.8	1	50.5	4
101													50.9	4
102	< 2	NR	8.57	0	233	4	161	4			14.6	4	46.7	3
104			1.35	0										
105	< 7	NR	6.42	3	216	3					12.4	3	43.3	2



**Table 5. -Laboratory performance ratings for standard reference water sample T-137 (trace constituents)--Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/28, number of reported values of 28 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Se (Selenium)			SiO2 (Silica)		Sr (Strontium)		Th (Thallium)		U (Uranium)		V (Vanadium)		Zn (Zinc)	
MPV =	1.3	µg/L	6.96	mg/L	230	µg/L	162	µg/L	10.0	µg/L	14.0	µg/L	49.5	µg/L
F-pseudosigma =	1.4		0.56		14		23		0.5		1.6		4.2	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
107	< 5	NR	6.78	4									45.6	3
109	0.2	3			206	1								
110			8.01	1										
111			6.80	4										
113	< 1	NR	6.86	4	224	4	106	0					46.8	3
114							160	4					42.0	1
116			6.95	4	246	2							52.0	3
118	< 2	NR	7.77	2									52.0	3
119	< 1	NR	7.00	4			162	4					42.0	1
120	0.2	3											50.9	4
121			6.46	3	224	4	106	0	10.0	4	22.4	0	48.0	4
122														
126														
128	1.3	4	6.53	3			161	4			15.1	3	62.6	0
129			6.72	4										
130					245	2					19.0	0	48.4	4
133	< 5	NR											44.2	2
134			6.96	4	227	4							13.5	0
138	< 1	NR	7.11	4	227	4	145	3			13.0	3	62.3	0
140			6.99	4									49.0	4
141	< 5	NR	6.37	2			63	0			13.0	3	50.0	4
142	1.0	4	7.90	1	248	2	174	3	10.8	2	14.3	4	47.1	3
144	< 2	NR											47.0	3
145			7.18	4	217	3					10.9	1	50.2	4
146	< 10	NR					163	4			12.5	3	47.4	4
149	< 2	NR			230	4	140	3					55.0	2
158											13.5	4	47.9	4
180	< 50.1	NR					166	4			17.0	1	36.3	0
190			3.24	0									52.7	3
191	1.2	4	6.90	4	233	4	140	3					58.1	1
193	< 5	NR											78.0	0
196	0.9	4			231	4	177	3	10.5	3	14.7	4	48.3	4
198													52.3	3
203	< 5	NR	6.32	2									33.5	0
204			7.35	3									51.2	4
211	1.8	4	4.94	0	200	0	149	3			11.0	1	54.0	2
212	< 5	NR	7.40	3	230	4	230	0			17.0	1	51.0	4
213							91	0					55.0	2
217			6.80	4	230	4	180	3	9.8	4	14.0	4	49.0	4
218					209	2								
219			7.00	4	250	2					12.0	2	53.0	3
221	0.5	3											49.2	4
224	0.0	NR									78.0	0	48.6	4
231	< 1	NR	7.24	3									51.1	4
234	0.3	3	7.02	4	222	3	173	4			17.5	0	44.6	2
235	1.5	4					160	4			13.3	4	52.0	3
236	20.0	0	5.93	1	212	2					9.0	0	37.0	0
241							29	0			15.8	2	59.0	0
247	< 1	NR			239	3	176	3			14.5	4	53.0	3

**Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Alkalinity					B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD	
MPV = 152 mg/L					200 µg/L		62.8 mg/L		92.0 mg/L		568 mg/L	
F-pseudosigma = 5					15		2.1		2.5		15	
Lab	OLR	V/16	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	2.2	15	153	4	214	3	65.6	2	93.2	4	570	4
5	2.3	12	154	4	198	4	63.7	4	3.0	0	585	2
8	2.7	15	161	1	194	4	61.4	3	90.0	3	562	4
10	3.8	12	152	4	210	3	63.8	4	94.3	3	570	4
11	2.3	15	139	0	227	1	65.7	2	91.4	4	564	4
12	1.1	9	141	0			64.0	3	89.0	2	551	2
13	2.9	12	158	2			66.6	1	91.9	4	558	3
15	2.3	11	148	3			58.6	1	84.8	0	560	3
16	2.2	13	148	3	< 500	NR	63.0	4	88.1	1	545.5	1
18	3.2	15	151	4	199	4	62.1	4	102.6	0	575	4
23	2.7	14	148	3			62.7	4	88.4	2	586	2
24	3.9	12	152	4	195	4	63.2	4	92.9	4		
25	1.9	15	157	3	191	3	68.6	0	94.1	3	546	2
26	3.2	12	152	4	199	4	65.5	2	91.7	4	566	4
28	1.3	13			225	1	63.9	3	79.8	0		
32	1.6	14	165	0	235	0	63.7	4	95.9	1	613	0
33	3.5	10	153	4			62.8	4	88.4	2		
36	1.6	15	170	0	157	0	58.0	1	96.5	1	580	3
38	2.5	8	155	3			62.5	4			556	3
40	3.4	13	151	4	210	3	61.5	3	90.0	3	566	4
42	2.6	13	159	2	195	4	64.0	3	105.0	0		
43	3.5	10	156	3			63.0	4	91.0	4	576	3
46	3.7	11	153	4			61.8	4	92.3	4	576	3
48	2.0	11	131	0	190	3	63.9	3	89.0	2	580	3
50	2.9	12	148	3	227	1	58.7	1	90.0	3	576	3
54	3.3	10	149	3			60.8	3	90.8	4	568	4
55	2.1	6	158	2					95.3	2	520	0
56	1.5	8	175	0			55.9	0	87.6	1		
57	2.1	13	140	0	160	0	63.0	4	89.0	2	540	1
58	2.2	9	156	3			38.1	0	98.6	0		
59	2.5	14	150	4			64.4	3	96.8	1	602	0
60	4.0	2	153	4					91.8	4		
61	1.3	14	81	0	201	4	74.4	0	168.0	0	582	3
64	2.7	8					65.6	2	92.4	4		
68	3.6	12	151	4	200	4	64.0	3	91.6	4		
69	3.4	10	147	3			61.0	3	91.8	4	571	4
70	3.3	14	149	3	197	4	63.8	4	94.5	2	563	4
72	2.6	6	156	3					91.0	4		
75	3.5	10	154	4	194	4	61.1	3	92.5	4	561	4
76	3.4	6	150	4					91.4	4	564	4
80	2.2	11	147	3			70.0	0	97.0	1	577	3
81	3.3	11	149	3			62.9	4	92.1	4		
83	2.1	10	153	4			59.0	1	95.5	2		
84	3.8	7	148	3			63.4	4	93.1	4		
85	3.6	14	152	4	205	4	62.5	4	94.0	3	564	4
86	2.1	11			203	4	65.2	2	101.0	0		
87	2.6	11	154	4			60.0	2	92.0	4	544	1
89	3.2	13	151	4			61.5	3	94.0	3	547	2
90	2.2	4	158	2			60.0	2			534	0
93	1.3	4					56.0	0				
96	3.8	5	155	4					92.9	4	570	4
97	3.0	14	157	3			61.2	3	93.9	3	573	4
100	2.1	7	156	3					90.7	3	592	1
101	2.6	7					126.0	0	93.4	3	555	3
102	1.5	11					56.8	0	92.0	4		
105	2.2	13	154	4			60.3	2	89.0	2	616	0
107	2.5	10	143	1			42.1	0	93.4	3		
109	2.9	11	159	2			59.8	2	93.0	4	571	4
111	2.4	9	151	4			75.0	0	90.7	3		
113	2.8	12	148	3			68.2	0	93.2	4		



**Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Alkalinity					B (Boron)		Ca (Calcium)		Cl (Chloride)		DSRD	
MPV = 152 mg/L					200 µg/L		62.8 mg/L		92.0 mg/L		568 mg/L	
F-pseudosigma = 5					15		2.1		2.5		15	
Lab	OLR	V/16	RV	Rating	RV	Rating	RV	Rating		Rating	RV	Rating
114	1.8	11	155	3			51.0	0	91.0	4	645	0
116	2.4	11	145	2	204	4	66.0	1	92.0	4	556	3
118	2.2	5	140	0							556	3
119	3.3	13	152	4	190	3	61.7	3	95.0	2	563	4
120	2.3	9	153	4			53.6	0	90.0	3	541	1
122	3.0	11	155	3	228	1	64.1	3	90.4	3	546	2
128	2.5	11			164	0	65.7	2	91.1	4		
129	2.7	13	158	2	203	4	63.0	4	92.0	4		
130	0.8	7			149	0	67.5	0			539	1
133	4.0	2					62.8	4				
134	3.3	15	154	4	214	3	62.4	4	93.8	3	593	1
138	3.5	14	153	4			61.7	3	90.2	3	568	4
140	3.1	11					62.0	4	92.0	4	561	4
141	2.9	13	154	4	232	0	62.9	4	91.0	4	561	4
142	2.1	14	154	4	179	2	62.9	4	91.4	4	592	1
143	2.0	3							93.4	3		
145	2.7	13	140	0	199	4	62.5	4	90.8	4		
146	2.7	11	160	1			57.3	0	92.7	4	574	4
149	3.2	13	150	4			64.1	3	92.1	4	573	4
153	2.9	10	153	4			60.6	2	91.0	4		
158	3.4	7	153	4					90.6	3	572	4
180	3.3	12	151	4	217	2	62.3	4	88.4	2		
183	1.0	3	160	1					907.0	0		
190	3.4	12	152	4			62.5	4	92.0	4	578	3
191	3.4	11	157	3			63.6	4	92.0	4		
193	3.3	2							94.7	2		
196	2.9	8					62.7	4	95.9	1		
203	2.9	6	147	3					91.4	4		
204	2.8	5	151	4					92.1	4		
208	1.7	3							95.3	2		
211	2.3	14	151	4	200	4	67.1	0	92.5	4	600	0
212	2.8	15	150	4	190	3	61.6	3	97.5	0	572	4
213	3.3	4	152	4					96.8	1		
217	2.6	14	156	3	220	2	65.9	2	99.7	0	588	2
218	2.7	5	139	0			67.3	0				
219	3.5	9			209	3	63.0	4				
221	3.0	7					62.8	4	92.5	4	589	2
224	1.9	12	64	0			60.6	2	91.8	4	548	2
226	3.0	8	157	3			64.7	3	90.2	3		
231	2.4	8	160	1			59.4	1	87.9	1		
234	3.7	15	150	4	196	4	61.9	4	90.2	3	566	4
236	1.5	15	104	0	174	1	61.4	3	103.6	0	762	0
241	2.5	12	158	2			63.0	4	94.0	3	560	3
244	3.7	2	154	4								
247	2.5	13	148	3	222	2	62.5	4	100.5	0		

Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)--Continued

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = F (Fluoride)			K (Potassium)		Mg (Magnesium)		Na (Sodium)		(total Phosphorus) as P	
MPV = 1.04 mg/L			6.53 mg/L		15.3 mg/L		108 mg/L		0.885 mg/L	
F-pseudosigma = 0.07			0.47		0.7		4		0.033	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	0.94	2	6.34	4	16.5	1	93	0	0.852	3
5			5.78	1	14.5	2	108	4		
8	0.91	1	6.40	4	15.3	4	111	3	0.950	1
10	1.01	4	6.69	4	15.5	4	108	4		
11	0.86	0	5.90	2	14.7	3	109	4	0.910	3
12			7.00	2	15.7	3	118	0		
13	1.06	4	6.59	4	15.4	4	110	4	0.849	2
15	0.97	2	7.15	2	1440.0	0	111	3	0.890	4
16	1.07	4	6.50	4	1.5	0	104	3	0.838	2
18	1.05	4	6.33	4	15.0	4	106	4	0.886	4
23	1.03	4	6.97	3	14.7	3	108	4	0.940	1
24	1.09	3	6.28	3	15.2	4	109	4		
25	0.92	1	6.79	3	16.5	1	117	1	1.130	0
26	0.80	0	7.12	2	15.7	3	111	3		
28	1.72	0	6.13	3	15.8	3	86	0	1.472	0
32	0.99	3	7.20	2	17.6	0	120	0		
33			6.30	4	14.8	3	106	4		
36	0.90	0	5.62	1	15.0	4	110	4	0.880	4
38			6.62	4	15.8	3	101	1		
40	1.07	4	7.86	0	14.8	3	105	3		
42			6.50	4	15.7	3	107	4	0.865	3
43			6.50	4	15.0	4	113	2		
46	1.07	4	6.49	4	14.9	3	109	4		
48			6.78	3	14.7	3	129	0	1.100	0
50	1.00	3	6.30	4	15.9	3	104	3		
54	1.06	4	7.00	2	14.7	3	106	4		
55									0.923	2
56			6.16	3	15.5	4	104	3		
57	1.00	3	9.50	0	16.0	3	110	4	0.900	4
58	1.04	4	7.20	2			92	0	0.880	4
59	0.78	0	6.80	3	15.8	3	112	3	0.900	4
60										
61	2.20	0	13.30	0	18.7	0	87	0	0.880	4
64					14.8	3	104	3	0.920	2
68			5.30	0	15.0	4	110	4	0.846	2
69	1.00	3	6.81	3	14.9	3	105	3		
70	1.06	4	6.13	3	15.1	4	103	2	0.889	4
72	0.12	0							0.880	4
75			6.35	4	15.1	4	111	3		
76	1.06	4								
80	1.00	3	7.00	2	15.0	4	100	1		
81	1.06	4	7.31	1	16.0	3	116	1	0.893	4
83	1.17	1	6.44	4	14.2	2	102	2	0.890	4
84	1.05	4			15.0	4	108	4		
85	1.04	4	7.10	2	10.3	0	109	4	0.890	4
86			6.68	4	15.9	3	114	2	0.946	1
87			6.49	4	14.4	2	108	4	0.850	2
89	1.06	4	6.51	4	15.1	4	107	4	0.850	2
90										
93	2.46	0			15.0	4				
96	1.08	3								
97	1.09	3	6.53	4	15.0	4	107	4	0.820	1
100	1.17	1							0.819	1
101			6.60	4	15.5	4	106	4		
102	1.20	0	5.62	1	14.5	2	93	0	0.886	4
105	1.10	3	6.74	4	14.0	1	101	1	0.930	2
107	1.03	4	6.30	4	18.0	0	108	4	0.904	3
109	1.10	3	6.95	3	15.0	4	104	3		
111			8.02	0	16.6	1	113	2		
113	1.09	3	8.32	0	15.3	4	104	2	0.857	3

**Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)—Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = F (Fluoride)			K (Potassium)			Mg (Magnesium)			Na (Sodium)			(total Phosphorus) as P		
MPV = 1.04 mg/L			6.53 mg/L			15.3 mg/L			108 mg/L			0.885 mg/L		
F-pseudosigma = 0.07			0.47			0.7			4			0.033		
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114	1.04	4	6.00	2	13.4	0	86	0	0.910	3				
116	1.00	3			15.9	3	112	3						
118									0.890	4				
119	1.05	4	6.50	4	15.1	4	105	3	0.880	4				
120			6.05	2	14.2	1	103	2	0.860	3				
122	1.03	4	7.04	2	16.1	2	108	4						
128	0.93	1	6.53	4	13.5	0	111	3						
129	0.78	0	6.70	4	16.0	3	108	4	0.833	1				
130			7.40	1	16.4	1	117	1						
133					15.5	4								
134	1.05	4	6.40	4	15.1	4	93	0	0.890	4				
138	1.04	4	6.40	4	15.2	4	111	3	0.862	3				
140	1.01	4	6.36	4	15.4	4	111	3	0.890	4				
141	1.09	3	6.53	4	15.5	4	113	2	0.868	3				
142	1.10	3	6.20	3	16.8	0	110	4	0.931	2				
143									0.862	3				
145	1.80	0	6.21	3	14.8	3	108	4	0.885	4				
146	0.99	3	7.27	1	14.6	3	108	4						
149	1.23	0	6.70	4	15.3	4	112	3	0.870	4				
153	0.83	0	6.50	4	16.1	2	109	4	0.890	4				
158	1.02	4							0.888	4				
180	1.00	3	6.26	3	15.3	4	108	4	0.843	2				
183														
190	1.02	4	6.61	4	14.7	3	107	4	0.858	3				
191			6.96	3	16.0	3	104	3	0.876	4				
193														
196	1.04	4	6.68	4	15.3	4	115	1						
203									0.844	2				
204														
208	0.20	0												
211	1.15	1	6.50	4	16.0	3	108	4	0.800	0				
212	0.99	3	6.50	4	15.2	4	110	4	0.820	1				
213									0.870	4				
217	0.92	1	6.90	3	16.0	3	113	2	0.900	4				
218					15.3	4								
219			6.80	3	14.5	2	106	4	0.880	4				
221			6.39	4	15.6	4	120	0						
224	1.29	0	5.92	2	16.2	2	104	3	0.785	0				
226			6.63	4	15.8	3	113	2						
231			6.24	3	15.8	3	110	4						
234	1.00	3	6.54	4	15.2	4	108	4	0.872	4				
236	0.80	0	6.05	2	15.8	3	107	4	0.960	0				
241	1.08	3	7.00	2	14.6	3	108	4	0.932	2				
244														
247	1.00	3	7.03	2	15.4	4	111	3	0.758	0				



Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)-Continued

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter; µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = pH			SiO2 (Silica)			SO4 (Sulfate)			Sp Cond			Sr (Strontium)			V (Vanadium)		
MPV = 8.33			13.0 mg/L			150 mg/L			920 µS/cm			567 µg/L			6.9 µg/L		
F-pseudosigma = 0.14			0.8			6			27			26			1.4		
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating			
3	8.07	1	6.6	0	140	1	922	4	635	0	6.5	4					
5	7.40	0	12.6	4	2	0	1063	0	578	4							
8	8.21	3	11.1	0	148	4	874	1	563	4	7.0	4					
10	8.39	4	13.1	4	156	3	925	4									
11	8.52	2	5.9	0	149	4	789	0	566	4	7.0	4					
12	8.00	0			82	0	848	0									
13	8.34	4	13.7	3	149	4	980	0			< 50	NR					
15	8.22	3			150	4	956	2									
16	8.20	3			129	0	935	3	517	1	8.2	3					
18	8.29	4	13.6	3	147	3	873	1	547	3	5.0	2					
23	8.36	4	12.9	4	148	4	702	0	594	2	9.8	1					
24	8.30	4	13.1	4	152	4	920	4	571	4							
25	8.46	3	16.5	0	149	4	939	3	599	2	5.0	2					
26	8.48	2			150	4	914	4			6.6	4					
28	8.25	3	10.9	0	132	0	907	4	547	3	10.6	0					
32	8.37	4	15.2	0	147	3	893	3	500	0	7.0	4					
33	8.30	4	12.1	2	149	4	920	4	570	4							
36	8.41	3	29.0	0	150	4	859	0	1360	0	85.9	0					
38	8.50	2	12.9	4			978	0									
40	8.39	4	13.6	3	154	3	923	4	552	3							
42	8.00	0	13.3	4	167	0	914	4	570	4	6.0	3					
43	8.22	3	13.0	4	150	4	921	4									
46			12.8	4	154	3	908	4			6.5	4					
48	7.10	0			149	4	922	4			< 200	NR					
50	8.30	4	13.6	3	150	4	920	4									
54	8.37	4			160	1	900	3									
55	8.46	3			150	4	890	2									
56	8.43	3			162	1	801	0									
57	8.40	3	12.0	2	170	0	970	1			< 100	NR					
58	8.28	4			157	2	893	3									
59	8.22	3	13.3	4	152	4	954	2	550	3	9.5	1					
60																	
61	8.04	0	6.4	0	150	4	1410	0			7.6	3					
64	8.42	3	12.4	3	152	4	850	0									
68	8.46	3	12.6	4			921	4	570	4	7.9	3					
69	8.27	4			148	4											
70	8.29	4	12.0	2	153	4	961	2	548	3	< 50	NR					
72	8.19	3			180	0	932	4									
75	8.41	3			159	2	917	4									
76	8.48	2			156	3	934	3									
80	8.20	3	14.0	2	199	0	918	4									
81	8.36	4					941	3	580	4	5.0	2					
83			11.7	1	144	2											
84	8.45	3					930	4									
85	8.42	3	13.0	4	148	4	927	4	580	4	< 20	NR					
86	8.38	4			160	1	948	2	575	4	10.4	0					
87	8.18	2	13.9	2	145	3	943	3									
89	8.38	4	13.0	4	150	4	904	3			4.5	1					
90	8.27	4					935	3									
93	8.60	1															
96	8.36	4					930	4									
97	8.49	2	12.7	4	140	1	936	3	550	3	7.3	4					
100	8.14	2			157	2	924	4									
101	7.48	0					922	4									
102			12.5	3	160	1	1054	0	490	0	6.0	3					
105	8.30	4	12.1	2	150	4	938	3	521	1	< 12	NR					
107	8.40	3	12.4	3			920	4									
109	8.22	3			156	3	913	4	498	0							
111	8.39	4	12.3	3	142	2	895	3									
113	8.24	3	12.8	4	153	4	916	4	622	0							

**Table 6. -Laboratory performance ratings for standard reference water sample M-136 (major constituents)-Continued**

(MPV, most probable value; µg/L, micrograms per liter; mg/L, milligrams per liter, µS/cm, Microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/16, number of reported values of 16 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = pH			SiO2 (Silica)		SO4 (Sulfate)		Sp Cond		Sr (Strontium)		V (Vanadium)	
MPV = 8.33			13.0 mg/L		150 mg/L		920 µS/cm		567 µg/L		6.9 µg/L	
F-pseudosigma = 0.14			0.8		6		27		26		1.4	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
114	8.19	3			158	2	966	1				
116			13.4	4	82	0	805	0	605	2		
118	8.20	3	14.8	0			906	3				
119	8.40	3	13.0	4	155	3	891	2				
120	8.32	4										
122	8.37	4			155	3	920	4				
128	8.24	3	12.9	4	147	3	923	4			6.9	4
129	8.22	3	12.5	3	149	4	892	2				
130									589	3	12.4	0
133												
134	8.38	4	13.2	4	153	4	932	4	541	3	6.3	4
138	8.36	4	13.4	4	150	4			551	3	6.0	3
140	8.59	1	13.5	3	164	0	897	3				
141	8.39	4	11.9	2	170	0	928	4			< 10	NR
142	7.99	0	15.1	0	157	2	921	4			10.1	0
143	8.50	2					856	0				
145	7.80	0	12.8	4	150	4	944	3	522	1	< 1.3	NR
146	8.44	3			158	2	905	3			5.6	3
149	8.30	4	13.2	4	153	4	927	4	1	0		
153	8.35	4			149	4	865	1				
158	7.67	0			153	4	930	4				
180	8.33	4			156	3	925	4			7.3	4
183	8.16	2										
190	8.28	4	5.6	0	150	4	918	4				
191	8.42	3	14.1	2	150	4			571	4		
193					151	4	907	4				
196	8.42	3			147	3	937	3				
203	8.46	3	11.1	0	151	4	913	4				
204	8.25	3	14.3	1	148	4	875	1				
208					154	3						
211	8.13	2	8.8	0	153	4	884	2	580	4	< 10	NR
212	8.40	3	13.0	4	156	3	869	1	520	1	6.9	4
213	8.29	4										
217	8.40	3	13.2	4	148	4	915	4	590	3		
218	8.32	4					922	4	579	4		
219			12.8	4					570	4	6.0	3
221					153	4						
224	8.25	3			152	4	900	3			0.2	0
226			13.5	3	148	4						
231			13.1	4	146	3						
234	8.37	4	13.2	4	152	4	935	3	545	3	7.5	4
236	8.06	1	11.1	0	150	4	870	1	534	2	6.0	3
241	8.20	3			45	0	626	0			5.8	3
244	8.42	3					916	4				
247	8.45	3	13.2	4	165	0	938	3	567	4	< 20	NR

**Table 7. -Laboratory performance ratings for standard reference water sample N-47 (nutrient constituents)**

(MPV, most probable value; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

		Analyte = NH <sub>3</sub> as N (Ammonia)		NH <sub>3</sub> + Org N as N (Ammonia+Organic N)		NO <sub>3</sub> + NO <sub>2</sub> as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO <sub>4</sub> as P (orthophosphate as P)		
		MPV = 0.165 mg/L		0.48 mg/L		0.239 mg/L		0.223 mg/L		0.151 mg/L		
		F-pseudosigma = 0.023		0.16		0.023		0.013		0.012		
Lab	OLR	V/5	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	2.0	5	0.173	4	0.65	2	0.280	1	0.255	0	0.157	3
5	4.0	2							0.218	4	0.154	4
7	2.3	3	0.150	3			0.230	4	0.250	0		
8	2.7	3	< 1	NR	< 1	NR	0.240	4	0.230	3	0.170	1
10	2.0	5	0.175	4	0.43	4	0.270	2	0.160	0	0.224	0
11	1.8	5	0.220	0	0.90	0	0.220	3	0.240	2	0.150	4
12	2.0	4			0.60	3	0.250	4	0.170	0	0.130	1
13	1.0	4	0.174	4			0.148	0	0.168	0	0.045	0
15	3.0	4	0.118	1			0.253	3	0.224	4	0.154	4
16	2.8	5	0.143	3	0.33	3	0.707	0	0.228	4	0.153	4
18	4.0	5	0.173	4	0.46	4	0.249	4	0.225	4	0.154	4
21	3.0	5	0.151	3	0.50	4	0.290	0	0.227	4	0.154	4
22	1.0	1							0.242	1		
23	3.3	4	0.149	3			0.227	3	0.228	4	0.162	3
25	0.5	4	< 0.07	0	< 0.07	0	0.210	2	0.270	0	0.050	0
28	0.0	3			0.10	0	0.010	0	0.870	0		
32	1.0	3	0.133	2			0.200	1			0.112	0
33	1.5	2	0.180	3							0.110	0
36	2.5	4	0.180	3	< 0.5	NR	0.219	3	0.230	3	0.132	1
38	3.3	4	0.162	4	0.32	2			0.234	3	0.147	4
39	3.0	4	0.116	0			0.239	4	0.225	4	0.151	4
42	4.0	2							0.223	4	0.156	4
46	3.8	5	0.168	4	0.41	4	0.223	3	0.224	4	0.155	4
48	1.8	5	0.140	2	0.97	0	0.190	0	0.230	3	0.150	4
53	1.3	3	0.220	0			0.210	2			0.163	2
55	3.4	5	0.186	3	0.44	4	0.248	4	0.223	4	0.136	2
56	1.8	4			0.47	4	0.200	1	0.210	2	0.090	0
57	0.8	4	< 0.05	0	0.60	3	0.307	0	0.180	0	0.180	0
59	2.4	5	0.130	1	0.40	3	0.250	4	0.200	1	0.160	3
60	3.0	3	0.155	4	0.34	3	0.269	2				
61	2.2	5	0.150	3	41.70	0	0.240	4	0.230	3	0.170	1
64	3.5	4	0.180	3			0.230	4	0.220	4	0.160	3
68	2.3	4	0.160	4	0.43	4	0.130	0	0.243	1		
69	3.0	1					0.220	3				
70	1.8	5	0.190	2	1.02	0	0.150	0	0.233	3	0.147	4
72	1.8	5	0.120	1	0.28	2	0.300	0	0.240	2	0.150	4
75	0.0	1					0.123	0				
76	4.0	1	0.160	4								
81	2.2	5	0.136	2	0.89	0	0.240	4	0.201	1	0.156	4
83	2.5	4	0.170	4			0.220	3	0.235	3	0.440	0
84	2.0	2	0.115	0			0.239	4				
85	3.8	5	0.170	4	0.51	4	0.250	4	0.220	4	0.160	3
86	2.3	3	0.187	3			0.211	2	0.238	2		
87	2.8	5	0.070	0	0.49	4	0.240	4	0.217	4	0.167	2
88	1.0	3	0.149	3			1.100	0			0.434	0
89	3.8	5	0.170	4	0.62	3	0.240	4	0.220	4	0.150	4
90	3.2	5	0.167	4	0.33	3	0.242	4	0.198	1	0.151	4
91	3.8	4	0.170	4	0.42	4	0.220	3	0.220	4		
93	3.0	1	0.188	3								
96	2.6	5	0.165	4	0.48	4	0.221	3	0.202	1	0.129	1
97	3.0	5	0.165	4	0.43	4	0.244	4	0.113	0	0.144	3
100	1.3	3	0.410	0	0.49	4	0.310	0	< 0.5	NR	< 0.5	NR
102	3.0	5	0.190	2	0.20	1	0.250	4	0.218	4	0.149	4
104	3.2	5	0.149	3	0.39	3	0.269	2	0.228	4	0.154	4
105	2.0	5	0.160	4	1.32	0	0.260	3	0.260	0	0.160	3
107	3.8	4	0.165	4			0.254	3	0.217	4	0.152	4
111	2.5	4	0.150	3			0.167	0	0.230	3	0.146	4
113	3.0	3			< 0.5	NR	0.221	3	0.216	3	0.145	3
114	3.0	3	0.170	4			0.270	2	0.230	3		
118	2.2	5	0.200	1	0.64	3	0.240	4	0.230	3	0.120	0



**Table 7. -Laboratory performance ratings for standard reference water sample N-47 (nutrient constituents)—Continued**

(MPV, most probable value; mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = NH <sub>3</sub> as N (Ammonia)			NH <sub>3</sub> + Org N as N (Ammonia+Organic N)		NO <sub>3</sub> + NO <sub>2</sub> as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO <sub>4</sub> as P (orthophosphate as P)	
MPV = 0.165 mg/L			0.48 mg/L		0.239 mg/L		0.223 mg/L		0.151 mg/L	
F-pseudosigma = 0.023			0.16		0.023		0.013		0.012	
Lab	OLR	V/5	RV	Rating	RV	Rating	RV	Rating	RV	Rating
119	3.2	5	0.180	3	0.67	2	0.240	4	0.220	4
120	2.2	5	0.017	0	0.46	4	0.220	3	0.200	1
121	3.2	5	0.149	3	0.35	3	0.236	4	0.236	2
122	3.0	5	0.160	4	0.33	3	0.220	3	0.210	2
126	4.0	1					0.230	4		
128	3.0	5	0.171	4	0.43	4	0.263	2	0.208	2
129	1.6	5	0.267	0	1.16	0	0.251	3	0.211	3
133	4.0	1							0.150	4
134	3.0	5	0.180	3	0.41	4	0.240	4	0.180	0
138	4.0	5	0.159	4	0.51	4	0.233	4	0.218	4
140	1.2	5	0.130	1	0.60	3	0.207	2	0.170	0
141	3.5	4	0.178	3	< 1	NR	0.222	3	0.217	4
142	2.8	5	0.152	3	0.53	4	0.315	0	0.219	4
143	3.8	4	0.160	4			0.253	3	0.218	4
145	3.0	5	0.185	3	0.37	3	0.200	1	0.220	4
146	3.0	3	0.188	3			0.210	2		
149	2.0	2			< 0.1	0			0.223	4
158	2.0	5	0.204	1	0.75	1	0.240	4	0.231	3
180	3.6	5	0.172	4	0.49	4	0.223	3	0.214	3
183	2.5	2							0.204	1
185	3.0	2			0.61	3			0.235	3
190	2.2	5	0.190	2	0.61	3	0.251	3	0.163	0
191	0.0	1								
193	1.5	2					0.322	0	0.230	3
196	3.0	1							0.140	3
197	3.5	2	0.148	3			0.237	4		
203	3.8	5	0.182	3	0.54	4	0.248	4	0.221	4
204	3.5	4	0.160	4			0.207	2	0.224	4
211	2.4	5	0.190	2	0.41	4	0.210	2	0.220	4
212	1.2	5	0.100	0	0.65	2	0.240	4	0.250	0
213	3.0	4	0.205	1	0.35	3			0.220	4
217	2.8	5	0.140	2	0.41	4	0.240	4	0.140	0
221	1.2	5	0.180	3	0.82	0	0.295	0	0.188	0
224	0.0	5	0.044	0	1.40	0	0.748	0	0.719	0
226	3.5	4	0.165	4	0.60	3	0.236	4	0.235	3
231	1.0	3	0.220	0			0.210	2		
234	2.0	4	0.182	3			0.201	1	0.242	1
237	2.0	1					0.207	2		
240	3.0	4	0.160	4			1.060	0	0.220	4
241	2.8	5	0.140	2	0.40	3	0.225	3	0.232	3
247	0.8	5	0.092	0	0.12	0	0.084	0	< 0.01	0

**Table 8. -Laboratory performance ratings for standard reference water sample N-48 (nutrient constituents)**

(MPV, most probable value mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than)

Rating		Absolute Z-value		Rating		Absolute Z-value	
4 (Excellent)		0.00 - 0.50		1 (Questionable)		1.51 - 2.00	
3 (Good)		0.51 - 1.00		0 (Poor)		greater than 2.00	
2 (Satisfactory)		1.01 - 1.50		NR (Not Rated)			

Analyte = NH <sub>3</sub> as N (Ammonia)					NH <sub>3</sub> + Org N as N (Ammonia+Organic N)			NO <sub>3</sub> + NO <sub>2</sub> as N (Nitrate + Nitrite)			total P as P (total Phosphorus)			PO <sub>4</sub> as P (orthophosphate as P)		
MPV = 0.698 mg/L					1.29 mg/L			0.780 mg/L			0.794 mg/L			0.580 mg/L		
F-pseudosigma = 0.037					0.20			0.065			0.041			0.028		
Lab	OLR	V/5	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
3	3.0	5	0.714	4	0.70	0	0.835	3	0.796	4	0.571	4				
5	3.5	2							0.826	3	0.583	4				
7	2.3	3	0.720	3			0.740	3	0.860	1						
8	1.3	4	< 1	NR	2.00	0	0.360	0	0.820	3	0.610	2				
10	2.4	5	0.687	4	1.32	4	0.790	4	0.610	0	0.814	0				
11	3.4	5	0.700	4	1.12	3	0.780	4	0.830	3	0.560	3				
12	1.4	5	0.600	0	1.60	1	0.780	4	0.730	1	0.530	1				
13	2.0	4	0.676	3			0.660	1	0.806	4	0.419	0				
15	2.8	5	0.652	2	0.54	0	0.809	4	0.802	4	0.588	4				
16	1.6	5	0.570	0	1.11	3	1.287	0	0.765	3	0.545	2				
18	3.6	5	0.739	2	1.34	4	0.789	4	0.793	4	0.580	4				
22	2.0	1							0.843	2						
23	3.4	5	0.650	2	1.38	4	0.780	4	0.830	3	0.580	4				
28	0.3	3			0.95	1	5.260	0	1.336	0						
30	3.0	2					0.711	2			0.587	4				
32	1.3	3	0.836	0			0.593	0			0.577	4				
33	3.0	2	0.720	3							0.560	3				
36	2.8	5	0.740	2	1.37	4	0.758	4	1.200	0	0.581	4				
38	3.6	5	0.696	4	1.14	3	0.843	3	0.806	4	0.576	4				
39	1.0	4	0.425	0			0.734	3	0.574	0	0.523	1				
40	3.5	2					0.790	4			0.560	3				
42	3.7	3					0.750	4	0.800	4	0.599	3				
46	3.2	5	0.678	3	1.23	4	0.775	4	0.758	3	0.610	2				
48	2.2	5	0.590	0	1.40	3	0.680	1	0.830	3	0.570	4				
53	1.3	3	0.800	0			0.610	0			0.593	4				
55	3.4	5	0.718	3	1.24	4	0.789	4	0.814	4	0.539	2				
56	2.0	4			1.20	4	0.710	2	0.750	2	0.490	0				
57	0.4	5	0.060	0	1.96	0	0.580	0	0.850	2	0.310	0				
58	1.3	4	0.670	3	2.45	0	0.600	0	0.850	2						
59	3.0	5	0.530	0	1.30	4	0.820	3	0.800	4	0.580	4				
60	2.7	3	0.686	4	0.67	0	0.800	4								
61	2.4	5	0.718	3	12.30	0	0.700	2	0.770	3	0.590	4				
64	3.8	4	0.710	4			0.790	4	0.780	4	0.600	3				
69	4.0	1					0.780	4								
70	2.8	5	0.693	4	1.55	2	0.540	0	0.811	4	0.566	4				
72	3.0	5	0.720	3	1.39	3	0.820	3	0.770	3	0.600	3				
75	3.0	1					0.744	3								
76	4.0	1	0.703	4												
80	1.3	3	0.780	0			0.530	0			0.590	4				
81	3.4	5	0.672	3	1.37	4	0.823	3	0.794	4	0.595	3				
83	1.8	4	0.670	3			0.750	4	2.846	0	1.720	0				
84	3.5	2	0.722	3			0.804	4								
85	3.4	5	0.710	4	1.39	3	0.740	3	0.810	4	0.600	3				
86	3.0	3	0.666	3			0.728	3	0.819	3						
87	2.4	5	0.600	0	0.99	2	0.840	3	0.760	3	0.591	4				
88	0.0	3	0.841	0			1.480	0			0.800	0				
89	3.0	5	0.730	3	1.60	1	0.780	4	0.770	3	0.580	4				
90	3.4	5	0.698	4	1.17	3	0.834	3	0.770	3	0.584	4				
91	3.8	4	0.680	4	1.23	4	0.730	3	0.780	4						
93	4.0	1	0.698	4												
96	3.6	5	0.690	4	1.28	4	0.785	4	0.781	4	0.539	2				
97	3.0	5	0.709	4	1.27	4	0.816	3	0.744	2	0.609	2				
100	2.2	5	0.680	4	1.42	3	0.956	0	0.740	2	0.540	2				
102	2.8	5	0.750	2	0.90	1	0.730	3	0.795	4	0.583	4				
104	2.6	5	0.672	3	1.26	4	0.851	2	0.808	4	0.675	0				
105	2.6	5	0.700	4	1.78	0	0.810	4	0.860	1	0.580	4				
107	3.5	4	0.706	4			0.816	3	0.825	3	0.591	4				
111	2.8	4	0.650	2			0.719	3	0.820	3	0.558	3				
113	3.8	4			1.36	4	0.734	3	0.775	4	0.566	4				
114	2.0	3	0.650	2			1.000	0	0.810	4						



**Table 8. -Laboratory performance ratings for standard reference water sample N-48 (nutrient constituents)--Continued**

(MPV, most probable value mg/L, milligrams per liter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/5, number of reported values of 5 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = NH <sub>3</sub> as N (Ammonia)					NH <sub>3</sub> + Org N as N (Ammonia+Organic N)		NO <sub>3</sub> + NO <sub>2</sub> as N (Nitrate + Nitrite)		total P as P (total Phosphorus)		PO <sub>4</sub> as P (orthophosphate as P)	
MPV = 0.698 mg/L					1.29 mg/L		0.780 mg/L		0.794 mg/L		0.580 mg/L	
F-pseudosigma = 0.037					0.20		0.065		0.041		0.028	
Lab	OLR	V/5	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
118	2.6	5	0.780	0	1.45	3	0.790	4	0.790	4	0.540	2
119	3.4	5	0.680	4	1.48	3	0.850	2	0.800	4	0.570	4
120	4.0	2	0.707	4	1.21	4						
122	2.4	5	0.660	2	1.14	3	0.740	3	0.750	2	0.540	2
128	2.4	5	0.680	4	0.94	1	0.773	4	0.820	3	0.414	0
129	2.4	5	0.745	2	1.24	4	0.813	3	0.748	2	0.527	1
133	4.0	1									0.570	4
134	3.8	5	0.720	3	1.20	4	0.790	4	0.790	4	0.580	4
138	3.8	5	0.673	3	1.37	4	0.758	4	0.779	4	0.589	4
140	1.8	5	0.690	4	1.44	3	0.689	2	0.880	0	0.520	0
141	2.6	5	0.657	2	1.18	3	0.746	3	0.777	4	0.633	1
142	2.8	5	0.672	3	1.19	4	0.908	1	0.777	4	0.615	2
143	3.8	4	0.700	4			0.810	4	0.764	3	0.581	4
145	3.0	5	0.730	3	1.10	3	0.660	1	0.800	4	0.590	4
146	3.3	3	0.716	4			0.713	2			0.590	4
158	2.8	5	0.712	4	1.32	4	0.858	2	0.797	4	0.521	0
180	3.8	5	0.702	4	1.24	4	0.732	3	0.791	4	0.588	4
183	3.0	2							0.737	2	0.571	4
185	2.0	2			1.92	0			0.783	4		
190	1.4	5	0.790	0	1.45	3	0.798	4	0.698	0	0.654	0
191	2.0	2					0.800	4			0.050	0
193	3.5	2					0.811	4	0.825	3		
203	2.8	5	0.648	2	1.05	2	0.828	3	0.769	3	0.577	4
204	3.0	2	0.697	4					0.742	2		
208	2.0	2					0.750	4			0.470	0
211	2.8	5	0.680	4	1.27	4	0.830	3	0.690	0	0.600	3
212	2.4	5	0.720	3	1.30	4	0.820	3	0.710	0	0.610	2
213	3.5	2							0.760	3	0.580	4
221	2.2	5	0.630	1	1.60	1	0.913	1	0.800	4	0.590	4
224	0.0	5	0.037	0	0.76	0	0.236	0	0.206	0	0.150	0
231	0.3	3	0.930	0			0.680	1			0.800	0
234	3.5	4	0.705	4			0.740	3	0.811	4	0.598	3
240	1.0	4	0.800	0			1.504	0	0.750	2	0.615	2
241	1.8	5	0.616	0	1.46	3	0.665	1	0.836	2	0.599	3

**Table 9. -Laboratory performance ratings for standard reference water sample P-25 (low ionic strength constituents)**

(MPV, most probable value; mg/L, milligrams per liter;  $\mu$ S/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/11, number of reported values of 11 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.501 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte =			Acidity as CaCO <sub>3</sub>		Ca (Calcium)		Cl (Chloride)		F (Fluoride)		K (Potassium)		Mg (Magnesium)	
MPV =			4.1 mg/L		1.67 mg/L		1.30 mg/L		0.139 mg/L		0.55 mg/L		0.350 mg/L	
F-pseudostigma =			3.1		0.08		0.17		0.022		0.05		0.019	
Lab	OLR	V/11	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
2	1.7	8			1.83	1	1.25	4			0.59	3	0.397	0
3	1.9	11	1.4	3	1.82	1	1.39	4	0.122	3	0.35	0	0.437	0
8	1.3	9			1.46	0	1.42	3	0.060	0	< 0.5	NR	0.310	0
15	4.0	1												
23	1.4	9			1.92	0	1.44	3	0.110	2	0.56	4	< 0.5	NR
25	2.0	8	< 8	NR	1.68	4	1.50	3	0.100	1	< 1.21	NR	0.353	4
26	2.4	9			2.26	0	1.19	3	0.140	4	0.56	4	0.420	0
28	2.0	6			1.77	2					0.50	2	0.380	1
33	2.8	9			1.63	4	1.31	4			0.50	2	0.350	4
36	2.0	10	11.0	0	1.50	0	1.93	0	0.120	3	0.66	0	0.230	0
38	3.2	8	5.6	3	1.63	4					0.52	3	0.357	4
39	2.9	9			1.72	3	1.40	4	0.120	3	7.00	0	0.375	2
46	3.7	6			1.66	4			0.169	2			0.343	4
48	2.0	9			1.72	3	1.00	2			0.55	4	0.390	0
58	2.0	8			1.39	0	2.00	0	0.120	3	0.53	4		
59	2.8	6					1.45	3	0.100	1				
60	0.0	1					0.75	0						
64	3.7	8			1.68	4	1.29	4			0.53	4	0.340	3
81	2.7	10	1.6	3	1.62	3	1.31	4	0.162	2	0.49	2	0.338	3
89	3.3	11	4.1	4	1.62	3	1.50	3	0.120	3	0.54	4	0.340	3
93	2.6	6			1.55	2	1.18	3	0.140	4			0.362	3
100	2.0	6					1.20	4	0.175	1				
101	2.2	7			3.28	0	2.98	0			0.56	4	0.340	3
102	1.2	9			1.39	0	0.98	1	0.208	0	0.35	0	0.300	0
105	3.9	10	9.2	1	1.73	3	1.00	2	< 0.2	NR	0.52	3	0.356	4
107	2.6	8			1.25	0	< 2.5	NR	0.150	3	0.53	4	0.290	0
110	3.8	9			1.68	4	1.25	4	0.139	4	0.56	4	0.330	2
111	3.6	8			1.63	4	1.15	3			0.55	4	0.340	3
113	2.1	10			1.81	1	1.84	0	0.131	4	0.38	0	0.360	3
116	3.3	3			1.62	3							0.340	3
134	3.5	10			1.68	4	1.28	4	0.138	4	0.61	2	0.351	4
138	3.6	9			1.65	4	1.27	4	0.158	3	0.51	3	0.340	3
140	2.3	10			1.61	3	1.48	3	0.102	1	0.56	4	0.344	4
141	2.8	9	< 1	NR	1.63	4	1.15	3	0.156	3	0.57	4	0.350	4
143	4.0	4					1.32	4						
145	2.1	10			1.62	3	1.44	3	0.150	3	0.31	0	0.270	0
146	2.3	9	3.9	4	1.65	4	0.97	1	< 0.2	NR	0.58	4	0.361	3
180	2.9	9			1.70	4	1.07	2	0.130	4	< 1.26	NR	0.367	3
190	2.4	10			1.82	1	1.18	3	0.130	4	0.58	3	0.370	2
196	2.8	10	5.8	3	1.59	3	0.80	0	0.150	3	0.60	3	0.362	3
197	4.0	3					1.24	4	0.142	4				
203	4.0	3					< 2	NR						
204	4.0	3					1.35	4						
221	2.0	3									0.56	4	0.329	2
224	2.7	11	5.8	3	1.65	4	1.44	3	0.268	0	0.50	2	0.376	2
228	2.3	8			2.18	0	1.17	3			0.48	2	0.365	3
237	3.0	6			1.67	4	1.51	3			0.56	4	0.350	4
238	3.0	6			1.67	4	1.51	3			0.56	4	0.350	4
241	1.3	9			3.10	0	2.00	0	0.149	4	0.70	0	0.500	0
244	2.4	3	1.7	3										
247	2.4	10	0.0	NR	1.71	4	1.08	2	0.080	0	0.61	2	0.350	4

**Table 9.** -Laboratory performance ratings for standard reference water sample P-25 (low ionic strength constituents)–Continued

(MPV, most probable value; mg/L, milligrams per liter;  $\mu$ S/cm, microsiemens per centimeter; Lab, laboratory number; OLR, overall laboratory rating for all reported values; V/11, number of reported values of 11 possible values; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.501 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Na (Sodium)			pH		PO <sub>4</sub> as P		SO <sub>4</sub> (Sulfate)		Specific Conductance	
MPV = 1.28 mg/L			6.52		0.068 mg/L		2.34 mg/L		20.9 $\mu$ S/cm	
F-pseudosigma = 0.07			0.20		0.005		0.20		1.8	
Lab	RV	Rating	RV	Rating	RV	Rating	RV	Rating	RV	Rating
2	1.94	0	6.42	4			2.26	4	16.8	0
3	1.48	0	5.95	0	0.066	4	3.99	0	20.8	4
8	1.22	3	7.34	0	0.060	1	2.10	2	18.2	2
15					0.068	4				
23	1.25	4	6.53	4	0.730	0	2.84	0	12.6	0
25	1.29	4	6.77	2	0.021	0	< 5	NR	78.0	0
26	1.09	0	6.63	3			2.32	4	20.8	4
28	1.20	2	7.15	0					19.1	3
33	1.25	4	6.36	3	0.050	0	2.23	3	20.9	4
36	1.10	0	6.45	4	0.073	2	< 5	NR	18.2	2
38	1.22	3	6.80	2	0.063	3			206.8	0
39	1.30	4	6.68	3	0.065	3			20.0	4
46	1.26	4			0.066	4			21.3	4
48	1.30	4	8.00	0	0.057	0	2.00	1	20.8	4
58	1.30	4	5.82	0			12.30	0	19.8	3
59			6.48	4	0.070	3	2.32	4	22.5	3
60										
64	1.23	3	6.73	2			2.36	4	20.3	4
81	1.29	4	6.56	4	0.063	3			24.0	1
89	1.24	3	6.45	4	0.070	3	2.47	3	20.1	4
93			6.90	1			1.97	1		
100			6.72	2	0.364	0	2.52	3	21.0	4
101	1.20	2	5.25	0					20.6	4
102	0.99	0			0.065	3	2.10	2	22.0	3
105	1.32	3	6.18	1	0.069	4	2.38	4	22.4	3
107	1.20	2	6.50	4	0.068	4			20.9	4
110	1.27	4	6.49	4			2.36	4	20.2	4
111	1.30	4	6.57	4			2.17	3	20.0	4
113	1.23	3	6.57	4	0.063	3	< 1	0	20.6	4
116	1.30	4								
134	1.30	4	6.57	4	0.070	3	2.28	4	22.0	3
138	1.25	4	6.39	3	0.067	4	2.44	3		
140	1.25	4	5.88	0	0.050	0	3.00	0	21.2	4
141	1.35	3	6.54	4	0.078	0	< 10	NR	21.0	4
143			6.30	2	0.068	4			20.5	4
145	1.13	0	6.30	2	0.070	3	2.28	4	23.5	2
146	1.50	0	6.39	3	0.074	2	< 5	NR	24.4	1
180	1.28	4	6.45	4	0.066	4	2.90	0	18.0	1
190	1.30	4	6.45	4	0.082	0	2.27	4	22.4	3
196	1.32	3	6.54	4	< 0.11	NR	2.35	4	27.9	0
197							2.29	4		
203			6.60	4	0.068	4	< 2.5	NR	20.9	4
204			6.19	1					20.2	4
221	1.10	0								
224	1.22	3	6.57	4	0.064	3	2.36	4	28.0	0
228	1.33	3	6.25	2			2.26	4	18.0	1
237	1.33	3					2.96	0		
238	1.33	3					2.96	0		
241	1.50	0	5.49	0	0.069	4			125.0	0
244			6.64	3					22.1	3
247	1.70	0	6.58	4	0.066	4	2.12	2	20.0	4

**Table 10. -Laboratory performance ratings for standard reference water sample Hg-21 (mercury)**

(MPV, most probable value; µg/L, micrograms per liter; Lab, laboratory number;  
V/1 number of reported values of 1 value; RV, reported value; <, less than)

Rating	Absolute Z-value	Rating	Absolute Z-value
4 (Excellent)	0.00 - 0.50	1 (Questionable)	1.51 - 2.00
3 (Good)	0.51 - 1.00	0 (Poor)	greater than 2.00
2 (Satisfactory)	1.01 - 1.50	NR (Not Rated)	

Analyte = Hg (Mercury)			
MPV =		3.03	µg/L
F-pseudosigma =		0.33	
Lab	V/1	RV	Rating
3	1	2.60	2
7	1	3.17	4
8	1	2.80	3
10	1	3.65	1
11	1	2.55	2
12	1	3.20	4
13	1	3.22	3
15	1	2.97	4
16	1	2.30	0
18	1	3.05	4
24	1	4.00	0
26	1	3.23	3
28	1	3.17	4
32	1	2.39	1
34	1	3.30	3
36	1	3.20	4
39	1	2.89	4
42	1	2.30	0
46	1	3.03	4
48	1	2.90	4
50	1	3.30	3
55	1	3.06	4
58	1	2.70	3
60	1	3.38	2
61	1	3.66	1
68	1	2.96	4
69	1	3.00	4
70	1	2.52	1
75	1	3.06	4
76	1	2.84	3
81	1	3.40	2
86	1	2.19	0
87	1	4.45	0
89	1	3.24	3
96	1	3.11	4
97	1	3.48	2
100	1	3.56	1
105	1	3.27	3
109	1	2.79	3
111	1	2.10	0
113	1	2.60	2
118	1	2.89	4
119	1	3.00	4
120	1	2.90	4
128	1	3.70	1
133	1	3.14	4
134	1	2.96	4
138	1	3.40	2
141	1	3.52	2
142	1	2.82	3
144	1	2.85	3
145	1	3.27	3
146	1	2.95	4
149	1	3.00	4
198	1	3.14	4
203	1	3.15	4
211	1	3.94	0
212	1	2.80	3
213	1	3.30	3
221	1	2.40	1
231	1	2.60	2
234	1	2.95	4
235	1	3.15	4
245	1	2.88	4
247	1	2.71	3



**Table 11.** -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)

Definition of analytical methods, abbreviations, and symbols

Analytical methods

0. Other/Not reported	=	
1. AA: direct, air	=	atomic absorption: direct, air
2. AA: direct, N <sub>2</sub> O	=	atomic absorption: direct, nitrous oxide
3. AA: graphite furnace	=	atomic absorption: graphite furnace
4. ICP	=	inductively coupled plasma
5. DCP	=	direct current plasma
6. ICP/MS	=	inductively coupled plasma/mass spectrometry
7. IC	=	ion chromatography
10. AA: extraction	=	atomic absorption: extraction [chelating agent(s) specified]
11. AA: hydride	=	atomic absorption: hydride [reducing agent specified]
12. AA: flame emission	=	atomic absorption: flame emission
22. Color:	=	colorimetric [color reagent specified]

Abbreviations and symbols

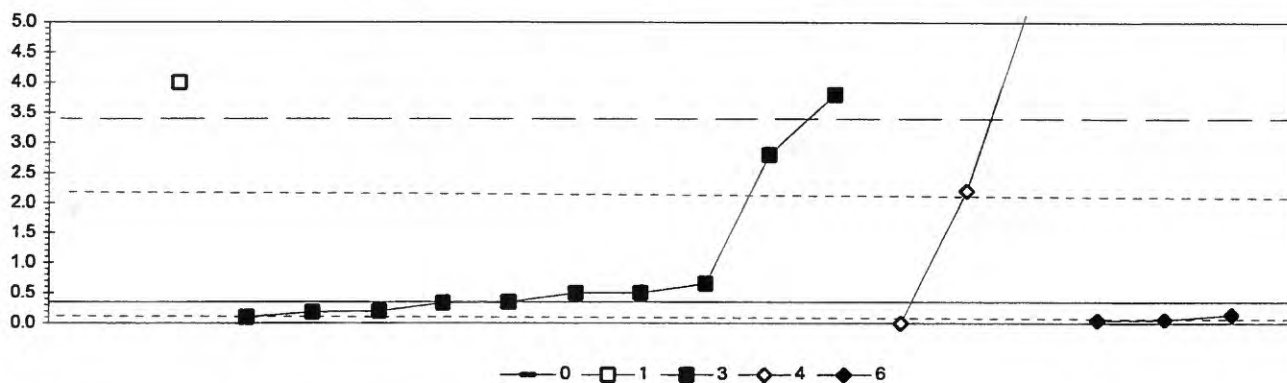
N	=	number of samples
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hi	=	lower hinge value
µg/L	=	micrograms per liter
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported
<	=	less than

<u>Constituent</u>	<u>page</u>	<u>Constituent</u>	<u>page</u>
Ag Silver	35	Mg Magnesium	49
Al Aluminium	36	Mn Manganese	50
As Arsenic	37	Mo Molybdenum	51
B Boron	38	Na Sodium	52
Ba Barium	39	Ni Nickel	53
Be Beryllium	40	Pb Lead	54
Ca Calcium	41	Sb Antimony	55
Cd Cadmium	42	Se Selenium	56
Co Cobalt	43	SiO <sub>2</sub> Silica	57
Cr Chromium	44	Sr Strontium	58
Cu Copper	45	Tl Thallium	59
Fe Iron	46	U Uranium	60
K Potassium	47	V Vanadium	61
Li Lithium	48	Zn Zinc	62

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Ag (Silver)

µg/L



0. Other	4. ICP
1. AA: direct air	6. ICP/MS
3. AA: graphite furnace	
N =	0 1 10 3 3
Minimum =	< 6 4.0 0.1 0.0 0.0
Maximum =	3.8 5.4 0.1
Median =	0.4
F-pseudosigma =	0.3

MPV = 0.3  
F-pseudosigma = 1.5  
N = 17  
Hu = 2.2  
Hl = 0.1

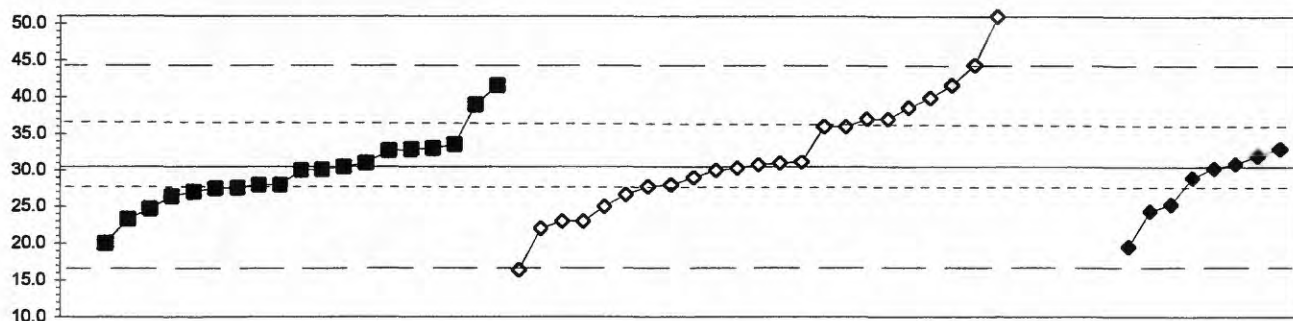
Lab	Rating	Z-value	0	1	3	4	6
3	NR					< 10	
5	NR					< 4	
8	NR					< 5	
12	0	2.26			3.8		
13	NR					< 10	
16	NR					< 2	
18	NR					< 3	
23	NR				< 0.2		
24	4	0.20			0.7		
25	NR					< 6	
26	NR				< 0.2		
32	NR					< 0.1	
36	4	0.00			0.3		
48	NR				< 0.2		
50	NR				< 1		
58	1	1.61			2.8		
59	NR					< 5	
68	4	0.10			0.5		
69	NR				< 1		
70	NR				< 5		
73	2	1.21				2.2	
81	NR					< 2	
85	NR			< 5			
86	0	3.32				5.4	
87	NR			< 2			
89	NR				< 2		
96	NR				< 1		
97	NR				< 0.43		
100	NR				< 0.05		
102	NR					< 1	
105	NR						< 2
107	NR				< 1		
113	NR					< 1	
114	0	2.39		4.0			
118	NR				< 1		
119	NR				< 5		
120	4	-0.01			0.3		
121	4	-0.14					0.1
128	NR						< 1
133	NR		< 6				
138	NR				< 0.05		
141	NR				< 0.5		
144	NR				< 0.2		
146	NR					< 10	
149	NR				< 0.1		
180	NR					< 5.3	
193	NR				< 5		
196	NR						0.0
203	NR				< 1		
211	NR				< 0.7		

Lab	Rating	Z-value	0	1	3	4	6
212	4	-0.11			0.2		
213	4	-0.10			0.2		
219	NR						< 0.1
221	4	0.10			0.5		
231	NR				< 1		
234	NR				< 0.2		
235	4	-0.19					0.1
236	NR					0.0	
241	4	-0.16			0.1		
247	NR						< 1

**Table 11.** Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Al (Aluminum)

µg/L



○ 2 ■ 3 ◇ 4 △ 5 ◆ 6

2. AA: direct nitrous oxide	5. DCP
3. AA: graphite furnace	6. ICP/MS
4. ICP	
N =	0 19 27 1 8
Minimum =	< 200 20.0 16.4 70.0 19.6
Maximum =	41.6 182.0 33.0
Median =	30.0 31.2 29.7
F-pseudosigma =	4.1 9.6 4.9

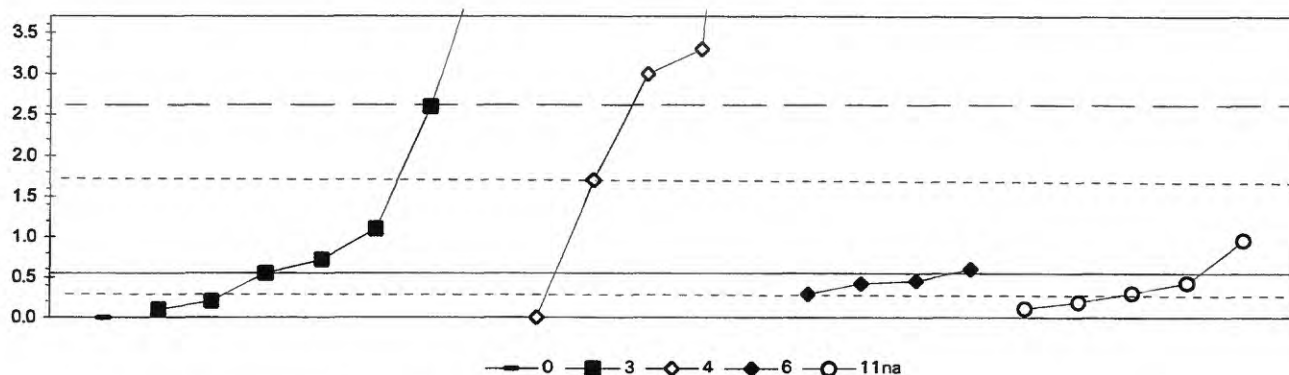
MPV = 30.5  
F-pseudosigma = 6.9  
N = 55  
Hu = 36.5  
HI = 27.3

Lab	Rating	Z-value	2	3	4	5	6
3	4	0.07			31.0		
8	0	2.99			51.0		
13	4	-0.36		28.0			
15	3	-0.57			26.6		
16	2	-1.09			23.0		
18	NR				< 100		
25	NR				< 19		
28	0	5.34			67.1		
32	4	0.22					32.0
33	0	5.76				70.0	
36	NR		< 200				
39	2	1.18			38.6		
40	4	0.04			30.8		
42	4	-0.03					30.3
46	1	1.63			41.7		
48	4	0.35		32.9			
50	3	-0.60		26.4			
59	4	-0.07			30.0		
61	0	22.09			182.0		
68	3	-0.80			25.0		
69	4	-0.44		27.5			
70	NR				< 100		
72	0	5.98			71.5		
73	4	-0.41			27.7		
75	4	-0.36			28.0		
81	NR			< 56			
85	NR				< 100		
86	1	2.03			44.4		
89	2	-1.05		23.3			
97	4	-0.06		30.1			
100	NR				< 40		
102	3	0.80			36.0		
105	3	-0.76					25.3
107	3	-0.51		27.0			
113	4	0.45		33.6			
119	4	0.32		32.7			
120	1	1.62		41.6			
121	4	-0.07		30.0			
128	3	-0.89					24.4
130	0	5.73			69.8		
134	4	0.10			31.2		
138	4	-0.22			29.0		
141	3	0.95			37.0		
142	1	-1.59					19.6
145	0	-2.06			16.4		
146	NR				< 200		
149	1	-1.53		20.0			
158	3	0.80			36.0		
180	NR				< 40.6		
190	3	-0.85		24.7			

Lab	Rating	Z-value	2	3	4	5	6
191	4	-0.22					29.0
196	4	0.06					30.9
198	4	-0.42		27.6			
203	4	-0.36		28.0			
204	4	0.36		33.0			
211	NR				< 100		
212	3	0.95			37.0		
219	2	-1.24			22.0		
221	4	0.07		31.0			
224	2	1.37			39.9		
234	4	-0.03			30.3		
235	2	1.24		39.0			
236	2	-1.09			23.0		
241	4	0.00		30.5			
247	4	0.36					33.0

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

As (Arsenic)  $\mu\text{g/L}$



0. Other		6. ICP/MS					
3. AA: graphite furnace		11na AA: hydride $\text{NaBH}_4$					
4. ICP		N =	0	7	5	4	5
		Minimum =	< 5	0.1	0.0	0.3	0.1
		Maximum =		4.6	9.1	0.6	1.0
		Median =		0.7	3.0	0.4	0.3
		F-pseudosigma =		1.1			

MPV = 0.6  
F-pseudosigma = 1.0  
N = 21  
Hu = 1.7  
Hi = 0.3

Lab	Rating	Z-value	0	3	4	6	11na
3	NR				< 10		
5	NR				< 70		
8	4	-0.24					0.3
13	NR			< 5			
16	NR			< 2			
18	NR			< 1			
23	NR			< 10			
25	NR				< 50		
26	NR						< 0.7
28	2	1.10			1.7		
32	NR					< 0.1	
34	4	-0.42					0.1
36	NR			< 1			
48	NR			< 1			
50	NR						< 1
58	0	3.87		4.6			
59	NR					< 5	
68	1	1.96		2.6			
69	NR			< 5			
70	NR			< 5			
72	NR			< 1			
73	0	8.17			9.1		
80	NR			< 1			
81	NR			< 2			
85	NR						< 2
86	4	-0.34					0.2
87	NR						< 2
89	NR						< 2
96	NR			< 1			
97	NR			< 0.14			
100	NR			< 2			
102	0	2.34			3.0		
105	NR					< 4	
107	NR			< 5			
109	4	-0.33		0.2			
113	NR			< 1.5			
118	NR			< 4			
119	NR						< 3
120	4	-0.11					0.4
121	4	0.39					1.0
126	NR						< 10
128	NR					< 1	
133	NR		< 5				
138	NR			< 2			
141	NR			< 5			
142	4	-0.25				0.3	
144	NR						< 0.2
145	NR				< 5.9		
146	NR				< 10		
149	NR			< 1			

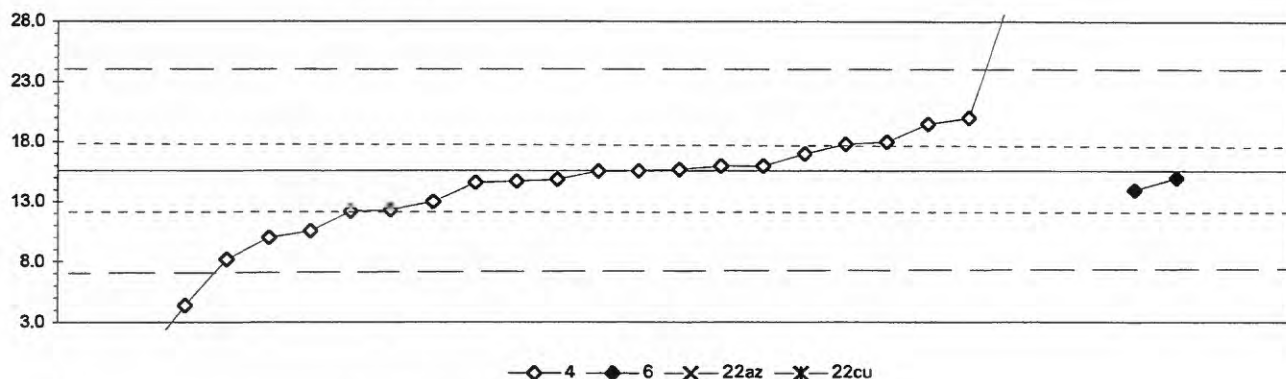
Lab	Rating	Z-value	0	3	4	6	11na
180	NR				< 37.1		
191	4	-0.12					0.4
193	NR			< 5			
196	4	-0.09					0.5
203	NR			< 5			
204	NR			< 5			
211	NR			< 2			
212	3	0.53			1.1		
213	NR			< 0.8			
219	NR				< 1		
221	4	0.00		0.6			
224	0	2.63			3.3		
231	NR			< 1			
234	4	0.16		0.7			
235	4	0.05					0.6
236	NR	-0.53			0.0		
241	4	-0.43		0.1			
247	NR						< 1



**Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued**

**B (Boron)**

µg/L



4. ICP	22cu. Color: curcumin			
6. ICP/MS				
22az. Color: azomethine				
N =	25	2	1	1
Minimum =	0.0	14.0	72.0	107.0
Maximum =	46.5	15.0		
Median =	15.6			
F-pseudosigma =	4.2			

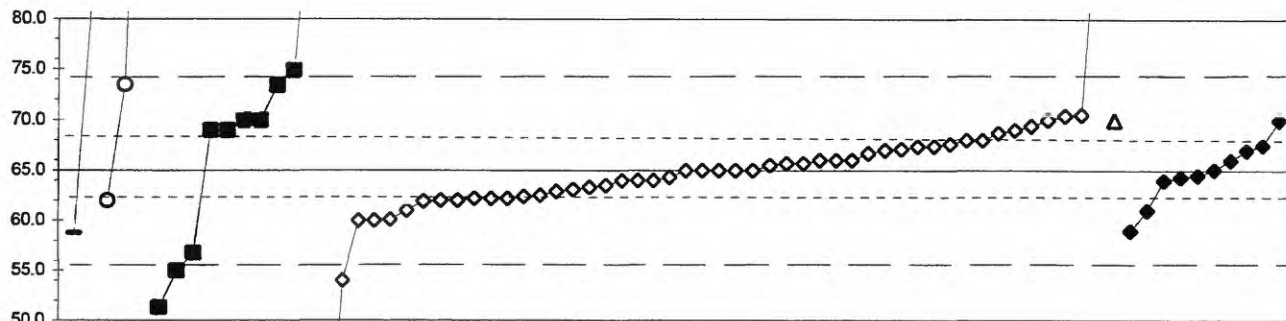
MPV = 15.6  
F-pseudosigma = 4.2  
N = 29  
Hu = 18.0  
HI = 12.3

Lab	Rating	Z-value	4	6	22az	22cu
3	NR		< 50			
5	4	0.01	15.6			
8	NR		< 50			
11	4	0.34	17.0			
16	NR		< 500			
18	NR		< 10			
24	3	-0.80	12.2			
25	NR		< 23			
26	3	-0.77	12.3			
28	0	6.14	41.5			
36	0	21.64				107.0
39	3	-0.61	13.0			
40	4	-0.21	14.7			
42	4	-0.37		14.0		
48	0	-2.52	< 5			
61	2	-1.18	10.6			
68	0	-2.64	4.4			
70	NR		< 50			
75	3	0.53	17.8			
85	4	0.10	16.0			
86	4	0.03	15.7			
100	0	7.32	46.5			
116	NR		< 20			
119	2	-1.32	10.0			
128	NR		< 10			
129	0	13.36			72.0	
130	0	-3.68	0.0			
134	4	0.00	15.6			
141	NR		< 10			
142	4	-0.17	14.9			
145	1	-1.74	8.2			
158	3	0.93	19.5			
180	0	3.34	29.7			
211	4	0.10	16.0			
212	2	1.05	20.0			
219	3	0.58	18.0			
234	4	-0.23	14.6			
236	0	-3.68	0.0			
247	4	-0.13		15.0		

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Ba (Barium)

µg/L



— 0 —○— 2 —■— 3 —◇— 4 —△— 5 —◆— 6

0. Other									
2. AA: direct nitrous oxide									
3. AA: graphite furnace									
	N =	2	3	10	48	1	10		
	Minimum =	58.8	62.0	51.3	30.3	70.0	59.0		
	Maximum =	82.0	123.0	93.9	93.6		70.0		
	Median =			69.5	65.0		64.8		
	F-pseudosigma =			12.3	3.7		2.2		
4. ICP									
5. DCP									
6. ICP/MS									
Lab	Rating	Z-value	0	2	3	4	5	6	
3	4	0.09				65.5			
4	2	1.03				70.0			
5	3	-0.59				62.2			
8	4	-0.01				65.0			
11	4	-0.01				65.0			
13	3	0.53				67.6			
15	4	0.14				65.7			
16	4	0.20				66.0			
18	2	-1.05				60.0			
24	3	-0.65				61.9			
25	4	-0.22				64.0			
26	4	-0.22				64.0			
28	4	0.48				67.4			
32	3	0.51						67.5	
33	2	1.03					70.0		
36	0	12.03		123.0					
39	3	0.76				68.7			
40	4	0.34				66.7			
42	4	-0.11						64.5	
46	4	0.49				67.4			
48	0	5.99			93.9				
50	0	-2.85			51.3				
59	4	-0.22						64.0	
61	2	1.11				70.4			
68	4	-0.01				65.0			
70	4	-0.40				63.1			
72	0	5.93				93.6			
75	3	-0.59				62.2			
81	4	0.20				66.0			
83	2	-1.05				60.0			
85	3	-0.55				62.4			
86	4	0.43				67.1			
87	1	-1.71			56.8				
89	1	2.05			74.9				
90	0	3.52	82.0						
96	3	-0.63		62.0					
97	0	-2.08			55.0				
100	3	-0.59				62.2			
102	4	0.41				67.0			
105	3	-0.84						61.0	
107	3	0.82			69.0				
113	2	-1.03				60.1			
116	3	0.61				68.0			
119	4	0.20				66.0			
121	3	-0.63				62.0			
126	NR		< 200						
128	2	-1.25						59.0	
130	3	0.90				69.4			
133	2	-1.30	58.8						
134	3	-0.63				62.0			

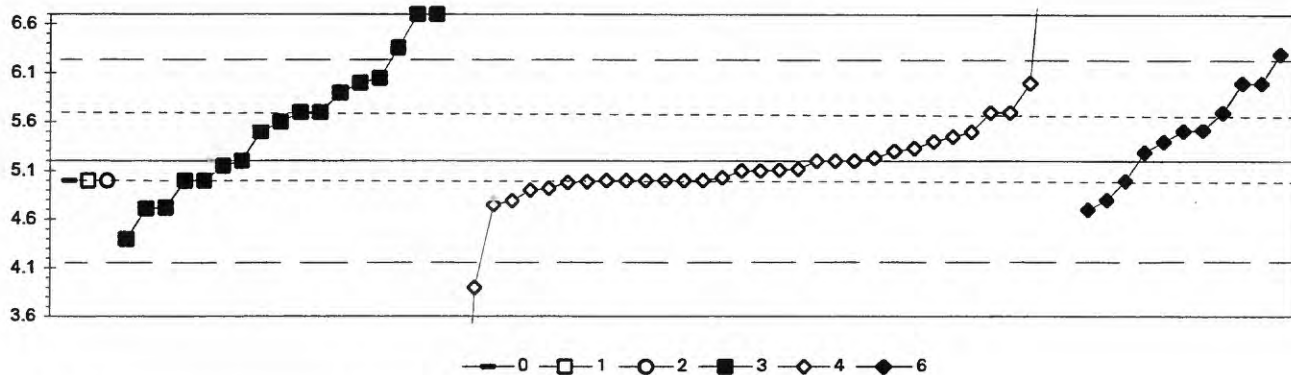
MPV = 65.0  
F-pseudosigma = 4.8  
N = 74  
Hu = 68.7  
Hi = 62.2

Lab	Rating	Z-value	0	2	3	4	5	6	
138	4	-0.36				63.3			
141	3	0.61				68.0			
142	4	0.01						65.1	
145	4	-0.15				64.3			
146	4	-0.45				62.9			
149	2	1.03			70.0				
158	4	-0.22				64.0			
180	3	-0.53				62.5			
191	4	0.41						67.0	
193	2	1.03			70.0				
196	4	-0.15						64.3	
198	4	0.14				65.7			
203	1	1.73			73.4				
204	2	1.13				70.5			
211	4	-0.01				65.0			
212	3	0.82				69.0			
217	4	-0.01				65.0			
219	3	-0.84				61.0			
224	0	-7.21				30.3			
231	1	1.75		73.5					
234	4	-0.32				63.5			
235	2	1.03						70.0	
236	0	-2.29				54.0			
241	3	0.82			69.0				
247	4	0.20						66.0	

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Be (Beryllium)

µg/L



0. Other							
1. AA: direct air							
2. AA: direct nitrous oxide							
N =	1	1	1	17	33	11	
Minimum =	5.0	5.0	5.0	4.4	0.0	4.7	
Maximum =				6.7	14.1	6.3	
Median =				5.6	5.1	5.5	
F-pseudostigma =				0.7	0.2	0.5	

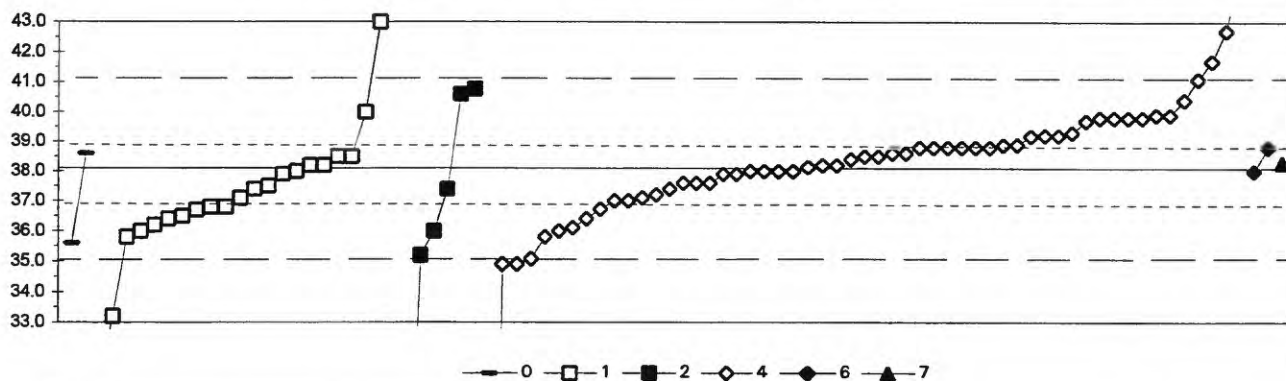
MPV = 5.2  
F-pseudostigma = 0.5  
N = 64  
Hu = 5.7  
HI = 5.0

Lab	Rating	Z-value	0	1	2	3	4	6
3	3	0.96					5.7	
5	4	-0.40					5.0	
8	3	0.58					5.5	
11	1	1.54					6.0	
13	3	-0.54					4.9	
15	0	-2.51					3.9	
16	4	0.39					5.4	
18	4	-0.33					5.0	
23	0	2.24				6.4		
24	1	1.54				6.0		
25	0	-3.85				< 2.4		
26	3	-0.79				4.8		
32	1	1.54						6.0
36	0	2.89				6.7		
39	0	2.12						6.3
40	4	0.00					5.2	
42	3	0.96						5.7
46	4	-0.15					5.1	
48	4	0.00				5.2		
59	4	-0.39						5.0
61	4	0.06					5.2	
68	3	0.96				5.7		
69	3	-0.94				4.7		
70	4	-0.39					5.0	
72	0	17.15					14.1	
75	4	-0.19					5.1	
76	4	0.17						5.3
81	4	-0.39					5.0	
83	4	-0.39					5.0	
85	4	0.00					5.2	
86	4	-0.42					5.0	
89	4	-0.10				5.2		
96	4	-0.39		5.0				
97	1	1.64				6.1		
100	3	-0.87					4.8	
102	4	-0.39					5.0	
105	3	-0.77						4.8
113	4	0.19					5.3	
114	4	-0.39			5.0			
119	1	-1.54				4.4		
120	3	-0.93				4.7		
128	3	-0.96						4.7
133	4	-0.39	5.0					
134	4	0.25					5.3	
138	4	-0.39					5.0	
141	0	2.89				6.7		
142	3	0.62						5.5
145	3	-0.58					4.9	
146	4	0.48					5.5	
149	2	1.35				5.9		

Lab	Rating	Z-value	0	1	2	3	4	6
158	4	0.00					5.2	
180	4	-0.19					5.1	
196	3	0.60						5.5
198	4	-0.39				5.0		
211	3	0.96				5.7		
212	3	0.96					5.7	
213	3	0.77				5.6		
217	4	-0.39					5.0	
219	1	1.54						6.0
224	0	5.97					8.3	
234	4	-0.17					5.1	
235	4	-0.39				5.0		
236	0	-10.02					0.0	
241	3	0.58				5.5		
247	4	0.39						5.4

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Ca (Calcium) mg/L



0. Other	4. ICP
1. AA: direct air	6. ICP/MS
2. AA: direct nitrous oxide	7. Ion chromatography
N =	2 22 6 55 2 1
Minimum =	35.6 30.7 24.0 3.5 38.0 38.3
Maximum =	38.6 76.0 40.8 45.0 38.8
Median =	37.3 36.7 38.5
F-pseudostigma =	1.3 1.3

MPV = 38.1  
F-pseudostigma = 1.5  
N = 88  
Hu = 38.9  
HI = 36.8

Lab	Rating	Z-value	0	1	2	4	6	7
3	3	0.73				39.2		
4	4	0.28				38.5		
5	2	-1.08				36.4		
8	4	-0.43				37.4		
11	2	1.12				39.8		
12	4	-0.04				38.0		
13	2	1.06				39.7		
15	0	-22.34				3.5		
16	4	-0.04				38.0		
18	3	-0.62				37.1		
24	4	-0.11				37.9		
25	0	2.35				41.7		
26	4	0.48				38.8		
28	3	0.53				38.9		
32	4	-0.04					38.0	
33	4	0.35	38.6					
36	2	-1.34			36.0			
39	4	0.48				38.8		
42	4	0.48				38.8		
43	4	-0.04				38.0		
46	4	0.28				38.5		
48	4	-0.30				37.6		
54	2	-1.21		36.2				
58	0	-3.15		33.2				
59	2	-1.34				36.0		
61	2	1.12				39.8		
64	4	0.48				38.8		
68	3	-0.69				37.0		
69	3	-0.62		37.1				
70	4	0.48				38.8		
75	3	-0.88		36.7				
81	3	0.73				39.2		
83	2	-1.27				36.1		
84	3	-0.82		36.8				
85	4	-0.11		37.9				
86	2	1.19				39.9		
87	4	-0.43			37.4			
89	4	-0.43		37.4				
93	1	-2.05				34.9		
97	4	0.28		38.5				
100	2	1.12				39.8		
101	0	24.54		76.0				
102	4	0.35				38.6		
105	2	-1.47				35.8		
107	2	-1.08		36.4				
109	2	-1.47		35.8				
110	4	0.09		38.2				
111	1	1.64			40.6			
113	4	0.09				38.2		
114	0	-9.10			24.0			

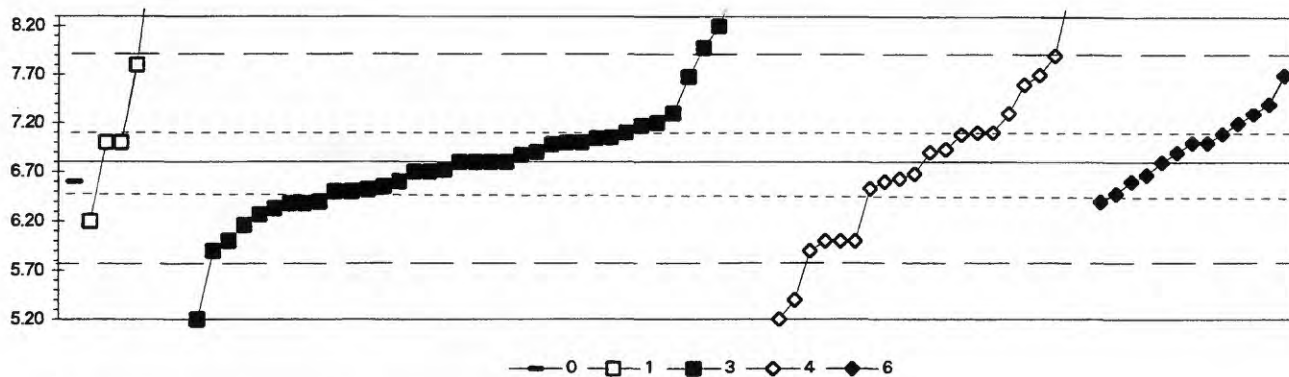
Lab	Rating	Z-value	0	1	2	4	6	7
116	2	1.19				39.9		
119	4	-0.11				37.9		
120	0	-4.74		30.7				
121	4	0.48				38.8		
122	4	-0.37		37.5				
128	1	1.96				41.1		
129	0	3.19		43.0				
130	1	1.51				40.4		
133	1	-1.59	35.6					
134	4	0.04				38.1		
138	4	-0.30				37.6		
140	2	-1.01		36.5				
141	4	0.22				38.4		
142	0	3.00				42.7		
145	3	0.53				38.9		
146	1	-2.05				34.9		
149	4	0.09		38.2				
158	4	-0.04				38.0		
180	3	-0.56				37.2		
190	4	0.15						38.3
191	4	0.48					38.8	
193	1	-1.85			35.2			
196	3	-0.82		36.8				
198	2	1.12				39.8		
203	4	0.28		38.5				
204	4	0.35				38.6		
211	0	4.49				45.0		
212	3	0.80				39.3		
217	4	-0.30				37.6		
218	1	1.76			40.8			
219	3	-0.69				37.0		
221	4	-0.04		38.0				
224	1	-1.94				35.1		
231	2	-1.34		36.0				
234	4	0.09				38.2		
236	3	-0.87				36.7		
241	2	1.25		40.0				
247	3	0.72				39.2		



**Table 11.** -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

**Cd (Cadmium)**

**µg/L**



0. Other			4. ICP				
1. AA: direct air			6. ICP/MS				
3. AA: graphite furnace							
	N =		1	6	37	23	13
	Minimum =		6.60	6.20	4.60	0.00	6.40
	Maximum =			9.90	8.57	13.60	7.70
	Median =			7.40	6.80	6.68	7.00
	F-pseudsigma =				0.47	0.89	0.39

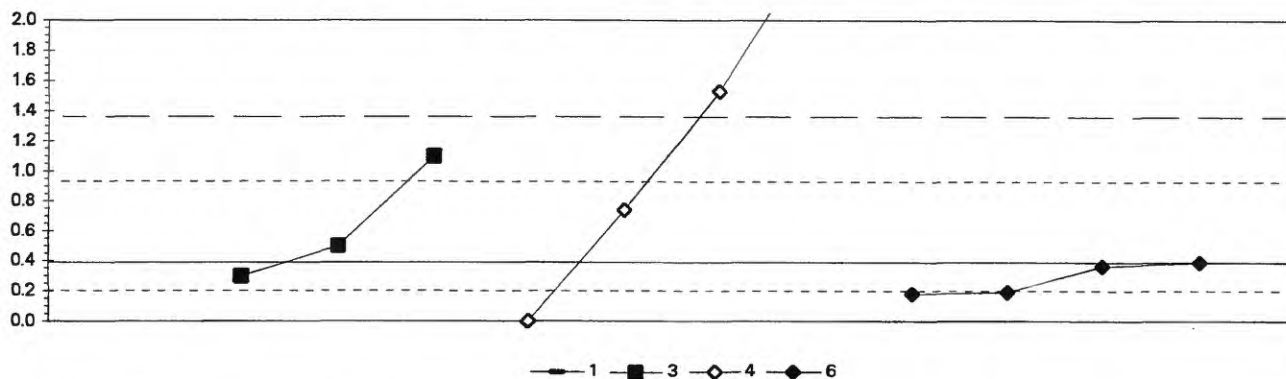
MPV = 6.80  
F-pseudsigma = 0.52  
N = 80  
Hu = 7.14  
HI = 6.44

Lab	Rating	Z-value	0	1	3	4	6
3	4	-0.39				6.60	
8	0	2.14				7.90	
13	3	0.58				7.10	
15	0	2.72			8.20		
16	3	0.97				7.30	
18	4	0.49			7.05		
23	3	-0.91			6.33		
24	1	-1.55			6.00		
25	NR					< 6	
26	4	0.14			6.87		
28	4	0.25				6.93	
32	4	0.19					6.90
36	3	-0.58			6.50		
39	2	1.16					7.40
40	1	1.55				7.60	
42	4	0.00					6.80
46	3	-0.54			6.52		
48	4	0.00			6.80		
50	4	0.00			6.80		
58	4	-0.19			6.70		
59	4	0.39					7.00
61	0	3.47				8.59	
68	4	-0.19			6.70		
69	1	1.71			7.68		
70	3	-0.52				6.53	
72	0	-3.11				5.20	
73	1	1.75				7.70	
75	0	2.29			7.98		
76	3	-0.62					6.48
80	0	-5.38			< 4		
81	1	-1.55				6.00	
85	1	1.94			7.80		
86	4	-0.23				6.68	
87	0	4.27			9.00		
89	2	-1.03				6.27	
90	2	-1.16			6.20		
96	4	-0.39				6.60	
97	3	-0.82				6.38	
100	4	0.00				6.80	
101	3	0.58					7.10
102	4	0.19					6.90
105	3	-0.78					6.40
107	4	0.35				6.98	
113	0	-4.76					4.35
114	4	0.39			7.00		
118	4	0.00				6.80	
119	4	0.39				7.00	
120	4	0.47				7.04	
121	1	1.75					7.70
126	4	0.19				6.90	

Lab	Rating	Z-value	0	1	3	4	6
128	4	-0.39					6.60
130	0	13.20				13.60	
133	4	-0.39	6.60				
134	3	0.54				7.08	
138	3	0.78			7.20		
140	4	0.39		7.00			
141	3	-0.78			6.40		
142	3	0.56					7.09
144	3	0.72			7.17		
145	1	-1.55				6.00	
146	4	-0.33				6.63	
149	1	-1.75			5.90		
158	0	-4.27			4.60		
180	1	-1.75				5.90	
190	0	3.44			8.57		
191	3	0.97					7.30
193	4	0.39			7.00		
196	4	-0.25					6.67
198	0	-3.11			5.20		
203	2	-1.24			6.16		
211	3	0.97			7.30		
212	0	-3.46				< 5	
213	0	6.02		9.90			
217	1	-1.55				6.00	
219	4	0.39					7.00
221	4	-0.49			6.55		
224	0	-2.72				5.40	
231	3	-0.82			6.38		
234	4	-0.16			6.72		
235	3	-0.58			6.50		
236	0	-13.20				0.00	
241	3	0.58			7.10		
247	3	0.78					7.20

**Table 11.** Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

**Co (Cobalt)** μg/L



1. AA: direct air		6. ICP/MS			
3. AA: graphite furnace					
4. ICP					
	N =	0	3	4	4
	Minimum =	< 10	0.3	0.0	0.2
	Maximum =	< 25	1.1	2.5	0.4
	Median =			1.1	0.3
	F-pseudosigma =				

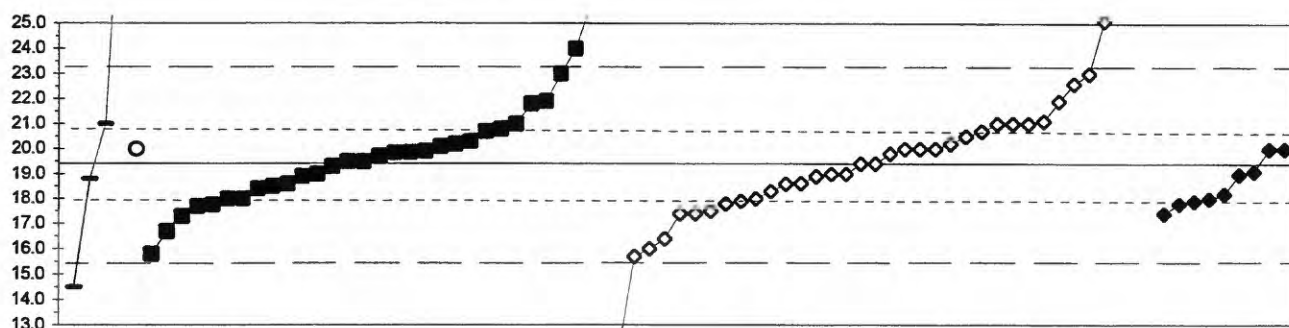
MPV = 0.4  
F-pseudosigma = 0.5  
N = 11  
Hu = 0.9  
Hl = 0.2

Lab	Rating	Z-value	1	3	4	6
3	NR				< 5	
5	NR				< 3	
8	NR				< 10	
13	NR				< 50	
16	NR				< 2	
18	NR				< 10	
24	2	1.42		1.1	< 12	
25	NR				< 12	
32	NR				< 0.2	
36	NR		< 10			
48	NR				< 50	
59	NR				< 5	
61	0	2.28			1.5	
68	NR				< 5	
70	NR				< 50	
75	NR				< 5	
81	NR				< 13	
85	NR				< 10	
89	NR			< 5		
97	NR			< 0.12		
100	NR		< 10			
102	3	0.70			0.7	
105	NR				< 1	
121	4	0.00			0.4	
128	NR				< 10	
138	NR			< 1		
141	NR			< 5		
142	4	-0.05			0.4	
145	NR				< 1.3	
146	NR				< 10	
180	NR				< 3.6	
191	4	-0.40			0.2	
193	NR		< 25			
196	4	-0.42			0.2	
211	NR				< 2	
212	NR				< 40	
213	NR			< 0.7		
219	NR				< 0.5	
221	4	0.22		0.5		
224	0	4.22			2.5	
234	4	-0.18		0.3		
236	NR	-0.78			0.0	
247	NR				< 1	

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Cr (Chromium)

µg/L



— 1 —○— 2 —■— 3 —◇— 4 —◆— 6

1. AA: direct air	4. ICP				
2. AA: direct nitrous oxide	6. ICP/MS				
3. AA: graphite furnace					
N =	4	1	30	37	9
Minimum =	14.5	20.0	15.8	9.0	17.4
Maximum =	32.0		25.7	36.3	20.0
Median =	19.9		19.6	19.4	18.2
F-pseudosigma =			1.7	2.3	0.9

MPV = 19.4  
F-pseudosigma = 2.0  
N = 81  
Hu = 20.7  
HI = 18.0

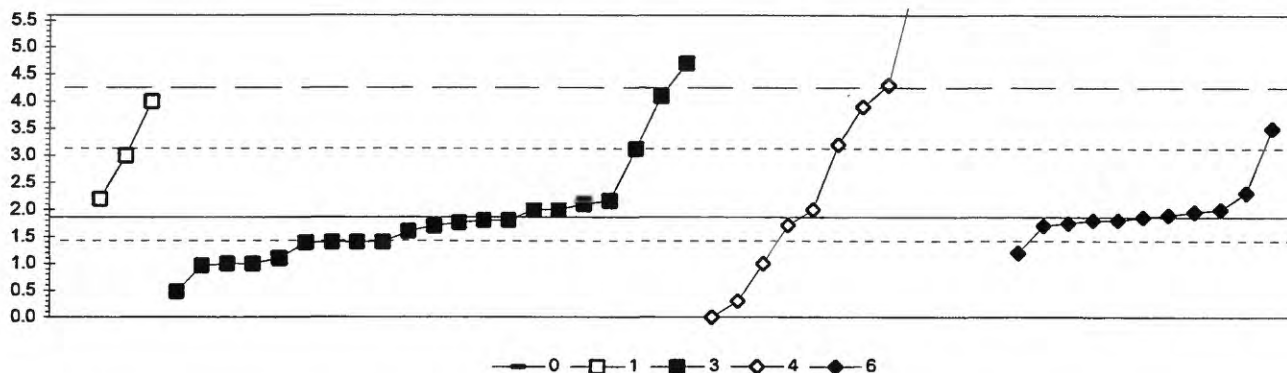
Lab	Rating	Z-value	1	2	3	4	6
3	3	-0.80				17.8	
5	4	0.00				19.4	
8	3	0.80				21.0	
11	4	0.30				20.0	
12	4	0.30				20.0	
13	2	1.25				21.9	
15	2	-1.05			17.3		
16	4	-0.20				19.0	
18	1	-1.85				15.7	
23	3	-0.82			17.8		
24	2	-1.50				16.4	
25	1	1.80				23.0	
26	4	0.40				20.2	
28	0	7.94				35.3	
32	4	0.30					20.0
36	3	-0.70			18.0		
39	1	1.80			23.0		
40	3	0.65				20.7	
42	4	-0.20				19.0	
46	4	0.22			19.9		
48	3	0.80			21.0		
50	4	-0.05			19.3		
58	3	0.65			20.7		
59	3	-0.70					18.0
61	4	0.00				19.4	
68	0	-3.70				12.0	
69	4	0.40			20.2		
70	3	-0.95				17.5	
72	0	2.85				25.1	
73	3	0.85				21.1	
75	3	-1.00				17.4	
76	4	-0.15					19.1
81	3	0.80				21.0	
83	3	-0.70				18.0	
85	4	0.20				19.8	
86	3	-1.00				17.4	
87	3	0.70			20.8		
89	4	0.23			19.9		
90	0	6.30	32.0				
96	4	0.35			20.1		
97	4	0.15			19.7		
100	0	-2.45	14.5				
101	0	3.55				26.5	
102	3	-0.75				17.9	
105	3	-0.80					17.8
107	4	0.05			19.5		
113	4	-0.40				18.6	
114	4	0.30		20.0			
118	0	3.15			25.7		
119	4	0.45			20.3		

Lab	Rating	Z-value	1	2	3	4	6
120	4	-0.50			18.4		
128	3	-1.00					17.4
130	0	8.44				36.3	
134	4	-0.39				18.6	
138	4	-0.45			18.5		
140	3	0.80	21.0				
141	4	0.30				20.0	
142	4	-0.21					19.0
144	2	1.25			21.9		
145	3	-0.55				18.3	
146	4	-0.25				18.9	
149	0	2.30			24.0		
158	3	-0.70			18.0		
180	3	0.55				20.5	
190	4	0.05			19.5		
191	3	-0.75					17.9
193	4	-0.40			18.6		
196	3	-0.60					18.2
203	2	-1.35			16.7		
204	2	1.20			21.8		
211	1	-1.80			15.8		
212	4	-0.20			19.0		
213	3	-0.85			17.7		
217	3	0.80				21.0	
219	1	-1.70				16.0	
221	4	0.25			19.9		
231	4	-0.30	18.8				
234	1	1.60				22.6	
235	4	-0.25			18.9		
236	0	-5.20				9.0	
247	4	0.30					20.0

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Cu (Copper)

µg/L



0. Other	4. ICP				
1. AA: direct air	6. ICP/MS				
3. AA: graphite furnace					
N =	0	3	21	12	11
Minimum =	< 5	2.2	0.5	0.0	1.2
Maximum =		4.0	4.7	16.6	3.5
Median =			1.7	3.6	1.9
F-pseudosigma =			0.5	3.7	0.2

MPV = 1.9  
F-pseudosigma = 1.2  
N = 47  
Hu = 3.1  
Hi = 1.4

Lab	Rating	Z-value	0	1	3	4	6
3	NR						
4	NR						
5	NR						
8	NR						
12	4	0.11			2.0		
13	NR						
16	4	0.11					
18	NR						
23	1	1.82			4.1		
24	4	-0.05			1.8		
25	NR						
26	4	-0.38			1.4		
28	0	5.19					
32	4	-0.05					
36	4	0.24			2.2		
39	2	1.33					
42	4	-0.05					
46	4	-0.08			1.8		
48	4	-0.13			1.7		
50	4	-0.37			1.4		
58	4	-0.37			1.4		
59	NR						
68	1	1.66					
69	NR						
70	NR						
73	1	1.98					
75	NR						
80	3	-0.70			1.0		
81	3	-0.70					
85	NR						
86	2	1.09					
87	NR						
89	NR						
90	3	0.93					
96	4	0.20			2.1		
97	4	-0.05			1.8		
100	NR						
101	0	3.61					
102	2	-1.27					
105	NR						
107	3	-0.62			1.1		
118	NR						
119	NR						
120	2	-1.12			0.5		
121	4	0.37					
128	4	-0.13					
130	0	11.98			16.6		
133	NR						
134	4	-0.12			1.7		
138	4	-0.21			1.6		

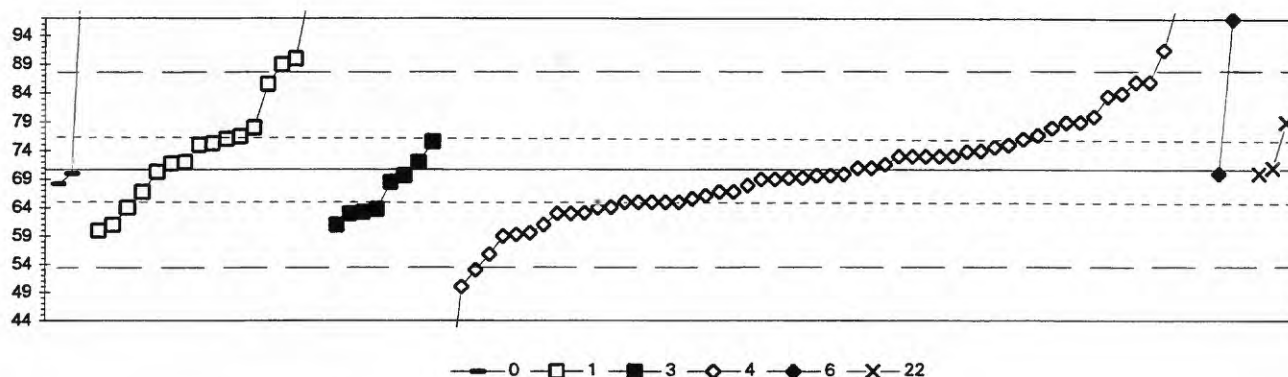
Lab	Rating	Z-value	0	1	3	4	6
140	1	1.74		4.0			
141	NR						
142	4	0.08					
145	NR						
146	NR						
149	NR						
180	NR						
190	3	-0.73			1.0		
191	4	-0.09					
193	NR						
196	4	0.00					
203	NR						
204	3	-0.70			1.0		
211	NR						
212	NR						
213	4	-0.37			1.4		
219	4	0.11					
221	4	0.11			2.0		
224	0	3.77					
231	4	0.28					
234	2	1.02			3.1		
235	4	0.03					
236	NR						
241	0	2.31			4.7		
247	3	-0.54					



Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Fe (Iron)

µg/L



0. Other	4. ICP					
1. AA: direct air	6. ICP/MS					
3. AA: graphite furnace	22. Colorimetric					
N =	3	17	8	56	3	3
Minimum =	68	60	61	27	70	70
Maximum =	120	102	76	118	185	79
Median =		75	66	70		
F-pseudosigma =		11	6	8		

MPV = 71  
F-pseudosigma = 9  
N = 90  
Hu = 77  
Hi = 65

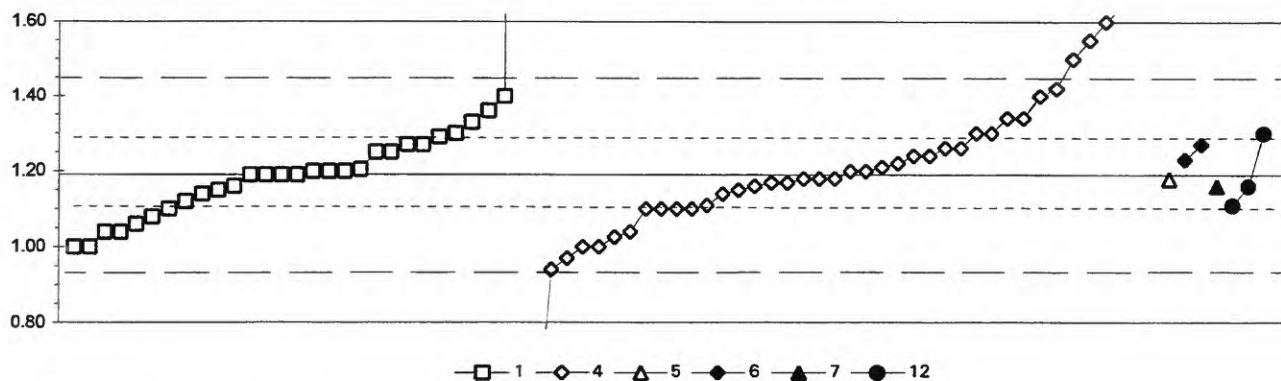
Lab	Rating	Z-value	0	1	3	4	6	22
3	3	-0.65				65		
4	3	-0.77				64		
5	4	-0.44				67		
8	4	-0.19				69		
10	3	0.62	76					
11	3	-0.88				63		
12	3	-0.65				65		
13	4	-0.44				67		
16	3	0.96				79		
18	4	-0.17				69		
21	3	0.96						79
23	NR		< 500					
24	4	-0.09				70		
25	3	-0.88				63		
26	2	-1.27				60		
28	0	2.42				92		
32	0	13.18					185	
33	4	-0.07	70					
35	4	0.04						71
36	1	1.72		86				
39	3	-0.76				64		
40	4	0.37				74		
42	4	0.50				75		
43	4	0.27				73		
46	3	-0.58				66		
48	0	3.38				100		
50	4	-0.11			70			
54	0	2.12		89				
59	3	-0.65				65		
61	3	-0.52				66		
68	1	-2.04				53		
69	2	-1.11		61				
70	1	-1.71				56		
72	0	5.51				118		
73	4	0.04				71		
75	4	-0.16				69		
80	2	-1.11			61			
81	0	-5.03				27		
83	4	-0.19				69		
85	4	0.46				75		
86	2	-1.31				59		
87	4	-0.04		70				
89	3	-0.79			64			
90	0	3.61		102				
91	4	-0.28	68					
96	0	2.23		90				
97	3	-0.85			63			
100	2	1.48				84		
101	3	0.95				79		
102	4	0.27				73		

Lab	Rating	Z-value	0	1	3	4	6	22
105	3	0.62				76		
107	2	-1.23		60				
109	4	-0.44		67				
113	4	0.11				72		
114	3	0.67		77				
116	4	0.27				73		
118	0	3.61		102				
119	3	-0.65				65		
121	1	1.54				84		
128	2	-1.34				59		
129	4	-0.07						70
130	4	0.39				74		
133	0	5.69	120					
134	4	-0.11				70		
138	4	0.04				71		
140	3	0.85		78				
141	0	-2.38				50		
142	3	0.85				78		
145	4	-0.11				70		
146	3	0.70				77		
149	3	-0.77		64				
158	3	-0.87				63		
180	4	0.28				73		
190	3	0.54		75				
191	4	-0.07					70	
193	4	0.16		72				
198	4	0.27				73		
203	4	0.50		75				
204	2	1.08				80		
211	3	-0.65				65		
212	1	1.77				86		
213	4	0.16			72			
219	0	3.04					97	
221	3	0.57			76			
224	0	4.00				105		
231	4	0.13		72				
234	4	-0.32				68		
235	3	-0.88			63			
236	1	1.77				86		
241	4	-0.25			69			
247	2	-1.11				61		

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)--Continued

K (Potassium)

mg/L



1. AA: direct air	6. ICP/MS					
4. ICP	7. Ion chromatography					
5. DCP	12. Flame emission					
N =	29	40	1	2	1	3
Minimum =	1.00	0.44	1.18	1.23	1.16	1.11
Maximum =	939	3.74		1.27		1.30
Median =	1.19	1.19				
F-pseudosigma =	0.11	0.16				

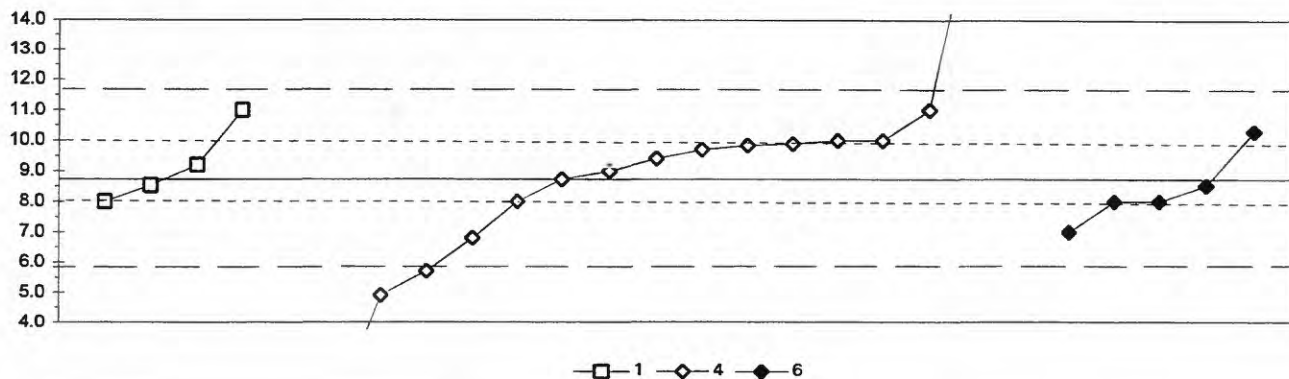
MPV = 1.19  
F-pseudosigma = 0.13  
N = 76  
Hu = 1.28  
Hi = 1.11

Lab	Rating	Z-value	1	4	5	6	7	12
3	4	0.48	1.25					
5	NR			< 1				
8	1	1.67		1.40				
11	1	-1.98		0.94				
12	1	-1.51		1.00				
13	4	0.16		1.21				
15	4	-0.08		1.18				
16	4	0.08	1.20					
18	NR			< 1				
24	3	-0.71		1.10				
25	1	1.83		1.42				
26	3	0.87		1.30				
28	0	4.68		1.78				
32	3	0.63				1.27		
33	4	-0.08			1.18			
36	0	7442	939					
40	2	1.19		1.34				
42	4	-0.24		1.16				
43	3	-0.71		1.10				
46	4	-0.16		1.17				
48	3	0.56		1.26				
54	3	0.87	1.30					
58	2	1.11	1.33					
59	1	-1.51		1.00				
61	0	20.24		3.74				
64	4	0.00	1.19					
68	0	-5.95		0.44				
69	4	-0.24					1.16	
70	4	0.24		1.22				
75	4	-0.40	1.14					
81	3	0.56		1.26				
83	4	-0.32		1.15				
85	3	0.63	1.27					
86	4	-0.08		1.18				
87	2	-1.19	1.04					
89	3	-0.87	1.08					
97	4	-0.32	1.15					
100	3	-0.71		1.10				
101	4	0.48	1.25					
102	3	-0.63		1.11				
105	2	1.19		1.34				
107	4	0.08	1.20					
109	4	0.08	1.20					
110	4	0.00	1.19					
111	3	0.79	1.29					
113	0	2.86		1.55				
114	1	-1.51	1.00					
119	0	2.46		1.50				
120	2	-1.03	1.06					
122	3	0.63	1.27					

Lab	Rating	Z-value	1	4	5	6	7	12
128	0	-6.85		< 0.3				
129	1	-1.51	1.00					
130	3	0.87		1.30				
134	4	0.12	1.21					
138	3	-0.71		1.10				
140	2	1.35	1.36					
141	4	0.40		1.24				
142	4	0.08		1.20				
145	1	-1.75		0.97				
146	2	-1.19		1.04				
149	3	0.87						1.30
180	0	3.25		1.60				
190	4	-0.24					1.16	
191	4	0.32				1.23		
193	4	0.00	1.19					
196	4	0.00	1.19					
198	3	-0.71	1.10					
203	3	-0.56	1.12					
204	3	-0.63						1.11
211	0	3.57		1.64				
212	4	0.08		1.20				
219	4	0.40		1.24				
221	4	-0.24	1.16					
224	4	-0.16		1.17				
231	2	-1.19	1.04					
234	4	-0.40		1.14				
236	2	-1.30		1.03				
241	1	1.67	1.40					
247	4	-0.08		1.18				

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Li (Lithium)  $\mu\text{g/L}$



1. AA: direct air				
4. ICP				
6. ICP/MS				
	N =	4	17	5
	Minimum =	8.0	0.0	7.0
	Maximum =	11.0	21.2	10.3
	Median =	8.9	9.4	8.0
	F-pseudosigma =		2.4	

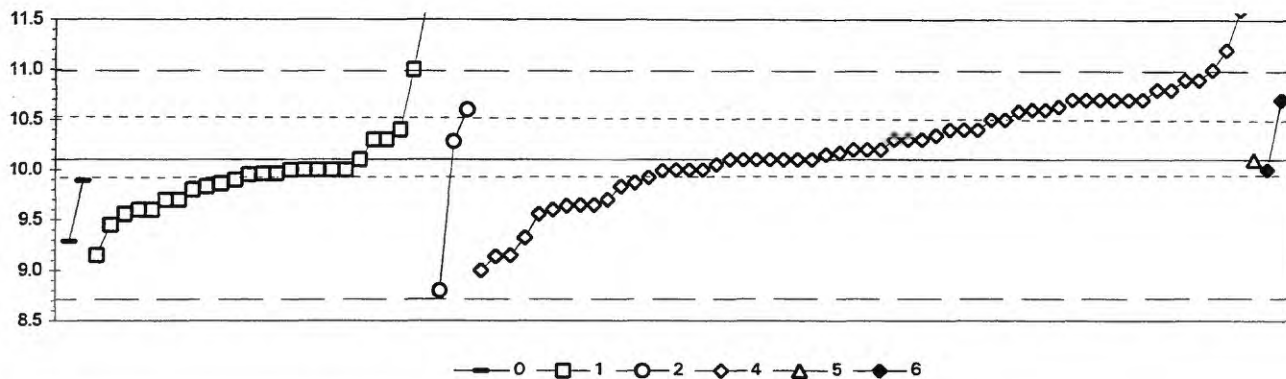
MPV = 8.7  
F-pseudosigma = 1.5  
N = 26  
Hu = 10.0  
Hi = 8.0

Lab	Rating	Z-value	1	4	6
3	0	8.41		21.2	
8	NR			< 10	
16	4	-0.49		8.0	
24	0	6.52		18.4	
25	3	0.86		10.0	
26	4	0.00		8.7	
32	4	-0.49			8.0
39	2	-1.30		6.8	
40	4	0.18		9.0	
42	3	0.86		10.0	
68	1	-2.04		5.7	
69	NR		< 50		
75	4	0.46		9.4	
85	4	0.32	9.2		
100	1	1.53	11.0		
105	NR			< 25	
109	4	-0.13	8.5		
121	2	1.06			10.3
130	0	-5.21		1.0	
134	3	0.65		9.7	
142	3	0.75		9.8	
145	0	-2.58		4.9	
149	4	-0.49	8.0		
196	4	-0.14			8.5
212	1	1.53		11.0	
219	2	-1.17			7.0
234	3	0.78		9.9	
236	0	-5.89		0.0	
247	4	-0.49			8.0

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Mg (Magnesium)

mg/L



0. Other	4. ICP
1. AA: direct air	5. DCP
2. AA: direct nitrous oxide	6. ICP/MS
N =	2 25 3 56 1 2
Minimum =	9.3 9.2 8.8 9.0 10.1 10.0
Maximum =	9.9 11.7 10.6 11.6 10.7
Median =	10.0 10.2
F-pseudsigma =	0.2 0.5

MPV = 10.1  
F-pseudsigma = 0.5  
N = 89  
Hu = 10.5  
Hl = 9.9

Lab	Rating	Z-value	0	1	2	4	5	6
3	2	1.26				10.7		
4	4	0.00				10.1		
5	2	-1.14				9.6		
8	4	0.21				10.2		
11	4	0.00				10.1		
12	3	0.84				10.5		
13	4	0.00				10.1		
15	3	-0.97				9.6		
16	4	-0.21				10.0		
18	4	-0.48				9.9		
23	2	-1.14		9.6				
24	4	-0.21				10.0		
25	0	2.32				11.2		
26	3	0.63				10.4		
28	2	1.12				10.6		
32	4	-0.21						10.0
33	4	0.00					10.1	
36	4	-0.21		10.0				
39	2	1.48				10.8		
40	2	1.26				10.7		
42	2	1.05				10.6		
43	4	-0.21				10.0		
46	4	0.42				10.3		
48	3	-0.57				9.8		
54	3	-0.84		9.7				
59	3	-0.84				9.7		
61	1	1.90				11.0		
64	4	-0.38				9.9		
68	2	-1.05				9.6		
69	3	-0.57		9.8				
70	4	0.21				10.2		
75	4	-0.42		9.9				
81	2	1.26				10.7		
83	3	-0.95				9.7		
84	4	-0.30		10.0				
85	4	0.42		10.3				
86	2	1.26				10.7		
87	2	-1.05		9.6				
89	3	-0.51		9.9				
93	4	0.42				10.3		
97	4	-0.30		10.0				
100	2	1.48				10.8		
101	4	-0.21		10.0				
102	1	1.69				10.9		
105	1	-1.64				9.3		
107	0	3.37		11.7				
109	4	-0.21		10.0				
110	2	-1.37		9.5				
111	2	1.05			10.6			
113	4	0.21				10.2		

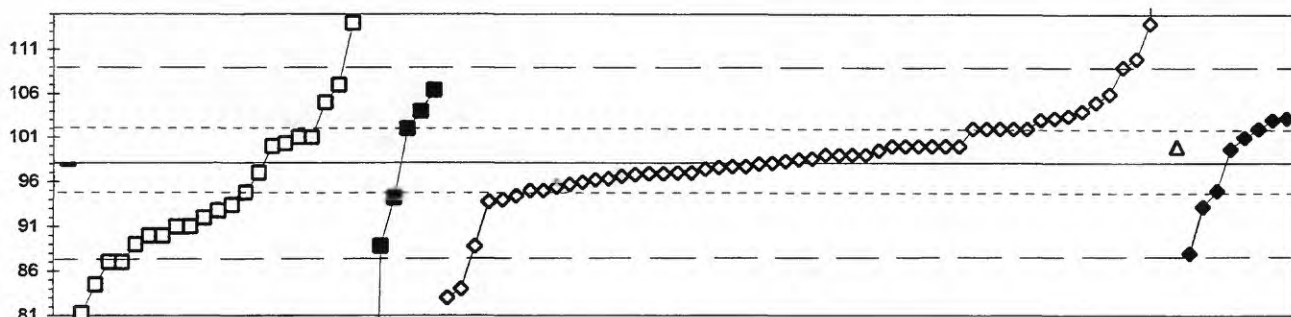
Lab	Rating	Z-value	0	1	2	4	5	6
114	0	-2.74			8.8			
116	3	0.84				10.5		
119	4	0.42				10.3		
120	1	-2.00		9.2				
121	4	0.00				10.1		
122	3	0.63		10.4				
128	1	-2.00				9.2		
129	1	1.90		11.0				
130	1	1.69				10.9		
133	1	-1.71	9.3					
134	4	-0.11				10.1		
138	4	0.00				10.1		
140	4	-0.21		10.0				
141	2	1.05				10.6		
142	0	3.16				11.6		
145	4	0.15				10.2		
146	3	-0.95				9.7		
149	4	-0.21		10.0				
158	3	0.63				10.4		
180	4	0.00				10.1		
190	4	-0.44	9.9					
191	2	1.26						10.7
193	3	-0.63		9.8				
196	4	0.42		10.3				
198	3	0.63				10.4		
203	2	-1.05		9.6				
204	1	-2.02				9.1		
211	2	1.26				10.7		
212	2	1.26				10.7		
217	4	0.00				10.1		
218	4	0.38			10.3			
219	0	-2.32				9.0		
221	3	-0.84		9.7				
224	4	0.11				10.2		
231	4	0.00		10.1				
234	4	-0.23				10.0		
236	3	0.51				10.3		
241	4	-0.32		10.0				
247	2	1.01				10.6		



**Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued**

**Mn (Manganese)**

**µg/L**



— 0 —□— 1 —■— 3 —◇— 4 —△— 5 —◆— 6

0. Other							
1. AA: direct air							
3. AA: graphite furnace							
	N =	1	21	6	54	1	8
	Minimum =	98	81	9	83	100	88
	Maximum =		114	106	142		103
	Median =		93	98	99		100
	F-pseudosigma =		8		4		6

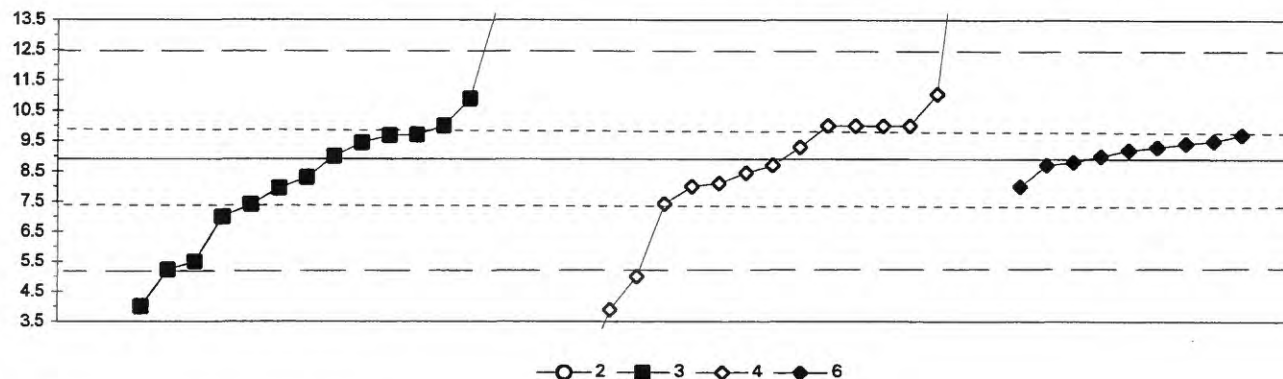
Lab	Rating	Z-value	0	1	3	4	5	6
3	2	1.08				104		
4	3	0.71				102		
5	4	-0.40				96		
8	4	0.16				99		
10	3	0.53		101				
11	4	0.35				100		
12	4	0.35				100		
13	4	0.16				99		
15	4	-0.24				97		
16	4	-0.02				98		
18	4	-0.27				97		
23	1	-1.69			89			
24	4	-0.33				96		
25	2	1.44				106		
26	4	0.00				98		
28	3	-0.79				94		
32	3	0.53						101
33	4	0.35					100	
36	0	-16.33			9			
39	2	1.26				105		
40	4	0.26				100		
42	4	0.16				99		
43	3	0.71				102		
46	4	-0.09				98		
48	4	0.35				100		
50	3	-0.71			94			
54	3	0.53		101				
59	3	-0.57						95
61	3	0.71				102		
68	3	-0.57				95		
69	0	-2.48		85				
70	4	-0.13				97		
72	0	7.91				142		
73	3	0.93				103		
75	4	-0.22				97		
76	4	0.29						100
80	1	-2.02		87				
81	3	0.71				102		
83	3	-0.75				94		
85	3	-0.60		95				
86	4	0.09				99		
87	1	-2.02		87				
89	0	2.90		114				
90	4	-0.20		97				
91	4	-0.04	98					
96	2	-1.29		91				
97	3	0.71			102			
100	3	0.71				102		
101	3	-0.67				94		
102	4	-0.22				97		

MPV = 98  
F-pseudosigma = 5  
N = 91  
Hu = 102  
Hi = 95

Lab	Rating	Z-value	0	1	3	4	5	6
105	3	-0.89						93
107	2	-1.48		90				
109	4	0.40		100				
113	4	0.04				98		
114	4	0.35		100				
116	3	0.89				103		
118	3	-0.97		93				
119	4	0.35				100		
120	1	1.51			106			
121	1	1.99				109		
126	1	1.62		107				
128	1	-1.84						88
129	2	-1.48		90				
130	1	-1.70					89	
134	3	0.97					103	
138	3	-0.57					95	
140	1	-1.66		89				
141	4	-0.20					97	
142	0	2.90					114	
145	4	0.07					99	
146	4	-0.35					96	
149	2	1.26		105				
158	4	0.16					99	
180	4	-0.07					98	
190	2	1.08			104			
191	3	0.89						103
196	3	0.71						102
198	4	-0.07					98	
203	2	-1.11		92				
204	4	0.35					100	
211	4	-0.20					97	
212	0	2.17					110	
217	4	0.35					100	
219	0	-2.75					83	
221	2	-1.29		91				
224	4	-0.49					95	
231	3	-0.86		93				
234	4	-0.44					96	
236	0	-2.57					84	
241	0	-3.06		81				
247	3	0.93						103

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Mo (Molybdenum)  $\mu\text{g/L}$



2. AA: direct nitrous oxide	6. ICP/MS			
3. AA: graphite furnace				
4. ICP				
N =	0	14	18	9
Minimum =	< 20	4.0	0.0	8.0
Maximum =	< 100	14.0	32.0	9.7
Median =		8.7	8.6	9.2
F-pseudostigma =		2.0	3.7	0.5

MPV = 8.9  
F-pseudostigma = 1.8  
N = 41  
Hu = 9.9  
Hi = 7.4

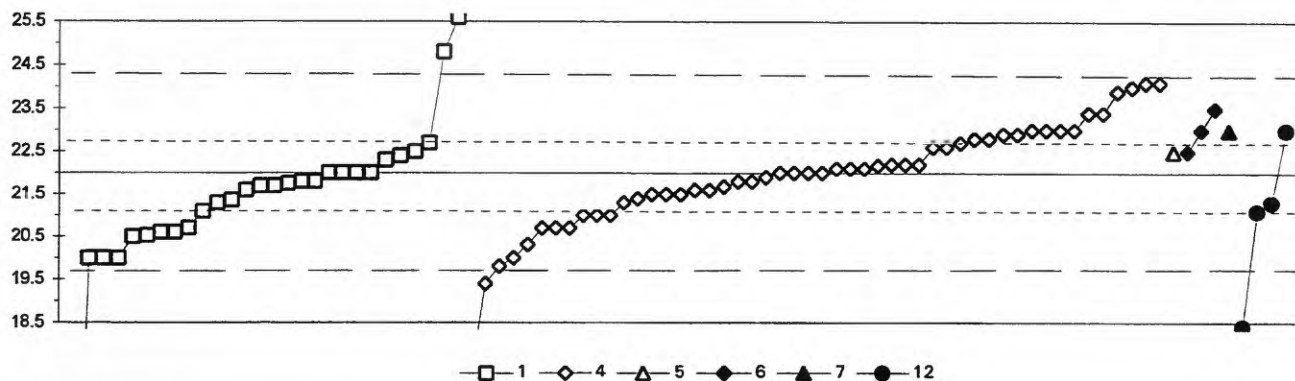
Lab	Rating	Z-value	2	3	4	6
3	4	-0.50			8.0	
5	NR				< 10	
8	3	0.61			10.0	
11	3	0.61			10.0	
16	4	0.22			9.3	
18	NR				< 20	
23	NR		< 100			
26	3	-0.82			7.4	
28	2	1.19			11.1	
32	4	0.22				9.3
36	NR		< 20			
39	4	0.33				9.5
40	3	0.61			10.0	
42	4	-0.06				8.8
48	4	0.44		9.7		
50	3	-0.83		7.4		
59	4	0.06				9.0
61	0	-2.77			3.9	
68	0	2.82		14.0		
70	NR				< 50	
72	0	-4.04			1.6	
75	NR				< 10	
81	3	0.61			10.0	
85	NR				< 20	
86	0	5.36			18.6	
87	2	-1.05		7.0		
97	3	0.61		10.0		
100	NR				< 50	
105	4	0.17				9.2
109	3	-0.53		8.0		
119	1	-1.88		5.5		
120	4	0.43		9.7		
121	0	-2.71		4.0		
128	NR				< 10	
134	4	-0.25			8.5	
138	4	-0.33		8.3		
141	NR				< 10	
142	4	0.28				9.4
145	0	-2.16			5.0	
146	4	-0.44			8.1	
149	4	0.06		9.0		
180	4	-0.11			8.7	
196	4	-0.11				8.7
211	0	12.77			32.0	
212	NR				< 40	
219	4	-0.50				8.0
221	4	0.30		9.5		
224	0	-4.92			0.0	
234	2	1.11		10.9		
236	0	-4.92			0.0	

Lab	Rating	Z-value	2	3	4	6
241	1	-2.03		5.2		
247	4	0.44				9.7

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Na (Sodium)

mg/L



1. AA: direct air	6. ICP/MS					
4. ICP	7. Ion chromatography					
5. DCP	12. Flame emission					
N =	28	50	1	3	1	4
Minimum =	10.0	17.3	22.5	22.5	23.0	18.4
Maximum =	25.6	24.1		23.5		23.0
Median =	21.7	22.0				21.2
F-pseudosigma =	1.0	1.0				

MPV = 22.0  
F-pseudosigma = 1.1  
N = 87  
Hu = 22.7  
HI = 21.1

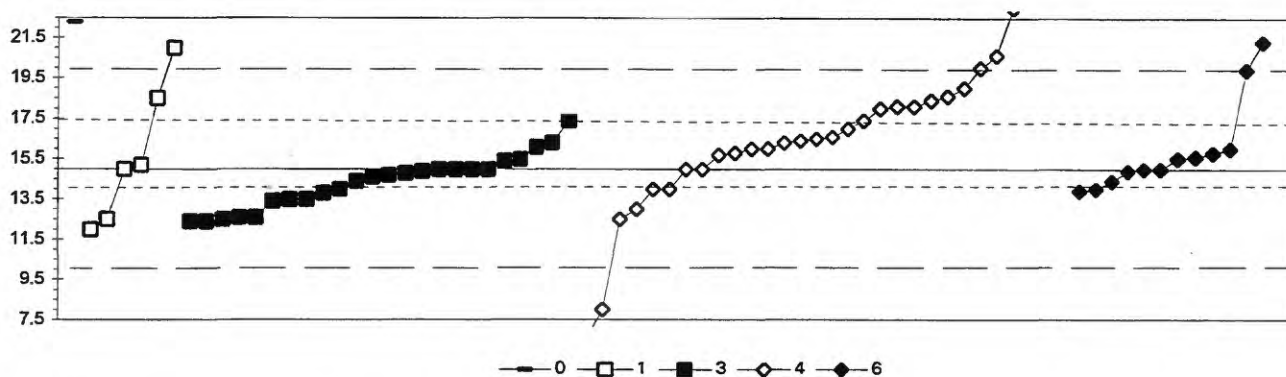
Lab	Rating	Z-value	1	4	5	6	7	12
3	0	2.44	24.8					
4	4	0.17		22.2				
5	3	-0.52		21.4				
8	4	0.00		22.0				
11	4	-0.44		21.5				
12	4	0.00		22.0				
13	4	0.09		22.1				
15	4	0.09		22.1				
16	3	-0.87		21.0				
18	4	-0.44		21.5				
24	4	-0.44		21.5				
25	1	1.83		24.1				
26	4	-0.17		21.8				
28	0	-4.11		17.3				
32	2	1.31				23.5		
33	4	0.44			22.5			
36	4	0.00	22.0					
39	1	1.65		23.9				
40	3	0.70		22.8				
42	4	0.17		22.2				
43	3	0.87		23.0				
46	3	0.70		22.8				
48	4	-0.35		21.6				
54	4	-0.26	21.7					
58	1	-1.74	20.0					
59	1	-1.74		20.0				
61	0	-2.26		19.4				
64	3	-0.55	21.4					
68	3	-0.87		21.0				
69	3	-0.78						21.1
70	4	-0.09		21.9				
75	4	0.26	22.3					
81	2	1.22		23.4				
83	2	-1.13		20.7				
84	0	-3.13						18.4
85	4	0.35	22.4					
86	3	0.78		22.9				
87	4	-0.26	21.7					
89	4	-0.21	21.8					
90	4	-0.17	21.8					
97	4	0.00	22.0					
100	3	0.52		22.6				
101	4	0.00	22.0					
102	3	0.78		22.9				
105	2	-1.13		20.7				
107	3	-0.78	21.1					
109	1	-1.74	20.0					
110	2	-1.22	20.6					
111	3	0.61	22.7					
113	2	-1.13		20.7				

Lab	Rating	Z-value	1	4	5	6	7	12
114	0	-10.49	10.0					
116	3	0.61		22.7				
119	4	0.17		22.2				
120	2	-1.28	20.5					
121	4	0.00		22.0				
122	3	-0.61	21.3					
128	1	1.83		24.1				
129	4	0.00	22.0					
130	1	1.74		24.0				
134	1	-1.74	20.0					
138	4	0.09		22.1				
140	4	0.44	22.5					
141	3	0.87		23.0				
142	3	0.87		23.0				
145	4	0.15		22.2				
146	3	-0.87		21.0				
149	3	0.87						23.0
158	1	-1.91		19.8				
180	4	-0.35		21.6				
190	3	0.87					23.0	
191	4	0.44				22.5		
193	2	-1.22	20.6					
196	3	0.87				23.0		
198	2	-1.31	20.5					
203	2	-1.13	20.7					
204	3	-0.61						21.3
211	4	0.00		22.0				
212	2	1.22		23.4				
217	4	-0.17		21.8				
219	3	0.87		23.0				
221	4	-0.17	21.8					
224	2	-1.47		20.3				
231	4	-0.35	21.6					
234	3	-0.61		21.3				
236	4	-0.28		21.7				
241	0	3.13	25.6					
247	3	0.52		22.6				

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Ni (Nickel)

µg/L



0. Other	4. ICP
1. AA: direct air	6. ICP/MS
3. AA: graphite furnace	
N =	1 6 24 30 12
Minimum =	22.3 12.0 12.4 6.4 13.9
Maximum =	21.0 17.4 47.0 21.3
Median =	15.1 14.7 16.6 15.3
F-pseudostigma =	1.2 2.7 0.9

MPV = 15.0  
F-pseudostigma = 2.5  
N = 73  
Hu = 17.4  
HI = 14.0

Lab	Rating	Z-value	0	1	3	4	6
3	3	-0.99				12.5	
8	4	-0.40				14.0	
11	4	0.40				16.0	
12	0	5.95				30.0	
13	NR					< 20	
15	3	0.52			16.3		
16	2	1.19				18.0	
18	NR					< 25	
23	NR				< 20		
24	3	0.95				17.4	
25	NR					< 49	
26	4	0.16			15.4		
28	1	1.59				19.0	
32	4	-0.40					14.0
36	3	-0.95			12.6		
39	4	0.40				16.0	
40	1	1.98				20.0	
42	4	0.00				15.0	
46	0	2.22				20.6	
48	4	0.00			15.0		
50	3	-0.99			12.5		
59	4	0.00				15.0	
60	4	-0.48			13.8		
61	3	0.63				16.6	
68	4	0.40				16.0	
69	4	-0.12			14.7		
70	NR					< 50	
72	2	1.35				18.4	
73	4	0.00				15.0	
75	NR					< 20	
76	4	-0.24					14.4
81	4	0.00				15.0	
85	3	0.52				16.3	
86	4	0.32				15.8	
87	4	0.00			15.0		
89	4	0.43				16.1	
90	2	-1.19			12.0		
96	4	0.00				15.0	
97	3	-0.95				12.6	
100	2	1.39			18.5		
101	2	1.23				18.1	
102	3	0.60				16.5	
105	4	0.32					15.8
107	4	-0.24			14.4		
113	3	0.56				16.4	
114	3	-0.99			12.5		
118	2	-1.03				12.4	
119	3	-0.60				13.5	
120	3	-0.60				13.5	
121	0	2.50					21.3

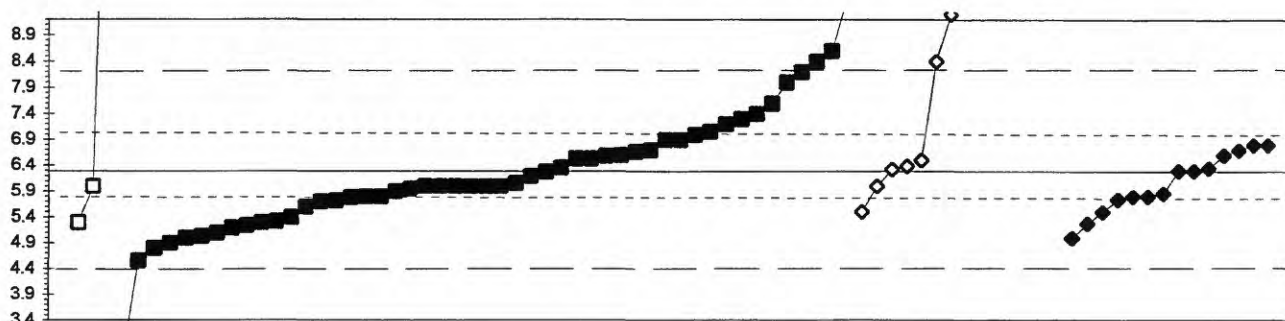
Lab	Rating	Z-value	0	1	3	4	6
128	4	-0.44					13.9
130	0	10.71				42.0	
133	0	2.90	22.3				
134	4	0.19			15.5		
138	3	-0.63			13.4		
140	0	2.38		21.0			
141	0	3.17				23.0	
142	4	0.21					15.5
144	4	-0.16			14.6		
145	3	-0.79				13.0	
146	4	0.28				15.7	
149	4	0.00			15.0		
158	3	0.79				17.0	
180	2	1.43				18.6	
190	4	-0.08			14.8		
191	4	-0.04					14.9
196	4	0.24					15.6
203	NR			< 20			
211	0	12.70				47.0	
212	0	-3.41				6.4	
213	4	-0.04			14.9		
219	4	-0.40				14.0	
221	3	0.95			17.4		
224	2	1.23				18.1	
231	2	-1.03			12.4		
234	4	0.00			15.0		
235	4	-0.40			14.0		
236	0	-2.78				8.0	
241	4	0.08		15.2			
247	1	1.94					19.9



Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Pb (Lead)

µg/L



— 0 — 1 — 3 — 4 — 6

0. Other	4. ICP				
1. AA: direct air	6. ICP/MS				
3. AA: graphite furnace					
N =	0	3	49	14	14
Minimum =	< 20	5.3	2.6	5.5	5.0
Maximum =		15.0	9.6	49.6	6.8
Median =			6.0	9.6	6.1
F-pseudosiroma =			1.0	9.4	0.6

MPV = 6.3  
F-pseudostigma = 1.0  
N = 80  
Hu = 7.0  
HI = 5.7

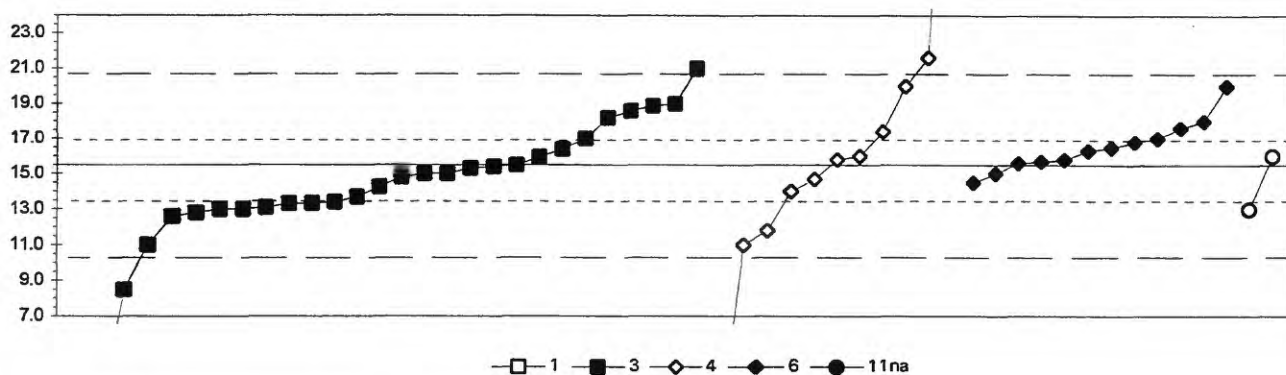
Lab	Rating	Z-value	0	1	3	4	6
3	0	3.13				9.3	
4	NR					< 400	
5	NR					< 30	
8	NR					< 50	
11	0	2.40			8.6		
13	4	-0.30			6.0		
15	4	0.10				6.4	
16	4	0.22				6.5	
18	3	-0.52			5.8		
23	2	-1.01			5.3		
24	2	1.15			7.4		
25	1	-1.80			4.6		
26	3	-0.59			5.7		
28	0	17.88				23.5	
32	4	0.01					6.3
36	3	-0.72			5.6		
40	0	12.18				18.0	
42	4	0.32					6.6
46	3	-0.51			5.8		
48	0	2.19			8.4		
50	2	-1.03			5.3		
58	4	-0.30			6.0		
59	3	-0.82					5.5
60	4	0.32			6.6		
61	3	-0.82				5.5	
68	3	0.63			6.9		
69	4	-0.35			6.0		
70	3	-0.93			5.4		
72	2	-1.34			5.0		
75	4	0.25			6.5		
76	2	-1.05					5.3
80	4	-0.30			6.0		
81	4	-0.30				6.0	
83	4	0.43			6.7		
84	3	0.95			7.2		
85	NR		< 50				
86	4	-0.09			6.2		
87	0	3.44			9.6		
89	2	-1.09			5.2		
90	0	9.06			15.0		
96	3	-0.61			5.7		
97	3	0.80			7.1		
100	2	1.36			7.6		
101	0	13.22				19.0	
102	0	3.75				9.9	
105	3	-0.51					5.8
107	2	-1.24			5.1		
109	2	-1.03		5.3			
113	2	1.05			7.3		
118	2	-1.45			4.9		

Lab	Rating	Z-value	0	1	3	4	6
119	3	0.63			6.9		
120	4	0.31			6.6		
121	4	-0.45					5.9
126	1	1.78			8.0		
128	4	0.01					6.3
130	0	18.84				24.4	
133	NR		< 20				
134	4	-0.24			6.1		
138	2	-1.13			5.2		
140	4	-0.30		6.0			
141	1	1.99			8.2		
142	3	-0.57					5.7
144	2	-1.30			5.0		
145	0	45.05				49.6	
146	4	0.04				6.3	
149	4	-0.30			6.0		
158	4	-0.41			5.9		
180	NR					< 27.2	
190	4	0.40			6.7		
191	3	-0.51					5.8
193	3	0.74			7.0		
196	4	0.06					6.4
198	4	0.25			6.5		
203	1	-1.55			4.8		
211	4	-0.30			6.0		
212	NR				< 20		
213	3	-0.51			5.8		
217	3	0.53					6.8
219	2	-1.34					5.0
221	4	-0.01			6.3		
224	0	2.19				8.4	
231	4	0.07			6.4		
234	4	-0.30			6.0		
235	3	0.53					6.8
236	0	5.94				12.0	
241	0	-3.84			2.6		
247	4	0.43					6.7

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Sb (Antimony)

µg/L



1. AA: direct air	6. ICP/MS
3. AA: graphite furnace	11na. AA: hydride NaBH <sub>4</sub>
4. ICP	
N =	1 27 11 12 2
Minimum =	88.0 1.4 0.0 14.5 13.0
Maximum =	21.0 45.0 20.0 16.0
Median =	14.8 15.8 16.4
F-pseudosigma =	2.3 4.3 1.2

MPV = 15.5  
F-pseudosigma = 2.7  
N = 53  
Hu = 17.0  
Hl = 13.3

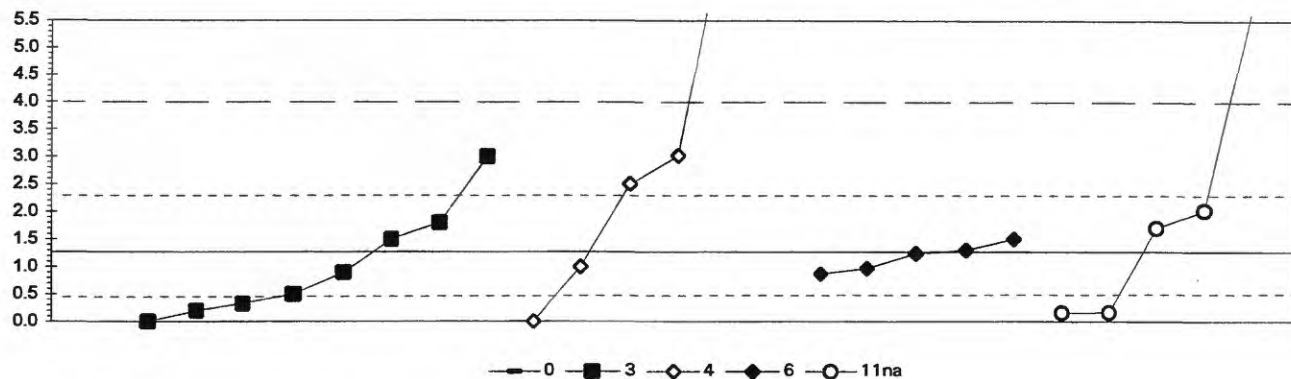
Lab	Rating	Z-value	1	3	4	6	11na
3	3	-0.55			14.0		
8	3	-0.92					13.0
11	1	1.65			20.0		
13	4	-0.26	14.8				
15	3	-0.99	12.8				
16	4	0.18			16.0		
18	3	-0.77	13.4				
23	4	0.17	16.0				
24	3	-0.92	13.0				
25	3	-0.80	13.3				
26	0	2.24			21.6		
32	4	0.07				15.7	
36	2	1.14	18.6				
39	3	0.55				17.0	
40	3	0.70			17.4		
42	4	0.29				16.3	
46	4	-0.18	15.0				
48	2	-1.07	12.6				
59	4	0.37				16.5	
61	4	-0.29			14.7		
68	0	-2.57	8.5				
69	4	0.33	16.4				
70	4	-0.04	15.4				
72	4	-0.18	15.0				
75	1	-1.65			11.0		
76	4	-0.37				14.5	
81	NR				< 28		
85	0	10.84			45.0		
89	4	-0.07	15.3				
96	3	-0.88	13.1				
97	3	0.99	18.2				
100	2	1.29	19.0				
102	2	-1.36			11.8		
105	4	-0.18				15.0	
113	4	0.11			15.8		
114	0	26.65	88.0				
119	4	0.18				16.0	
120	4	-0.46	14.3				
126	4	0.00	15.5				
128	4	0.11				15.8	
138	3	-0.81	13.3				
141	NR				< 50		
142	3	0.77				17.6	
146	NR				< 50		
149	0	-5.18	1.4				
180	NR				< 31.4		
196	4	0.04				15.6	
198	3	0.55	17.0				
211	1	2.02	21.0				
212	3	-0.92	13.0				

Lab	Rating	Z-value	1	3	4	6	11na
217	3	0.92				18.0	
219	1	1.65				20.0	
234	2	1.25	18.9				
235	3	-0.66	13.7				
236	0	-5.70			0.0		
241	1	-1.65	11.0				
247	4	0.48				16.8	

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Se (Selenium)

µg/L



0. Other		6. ICP/MS				
3. AA: graphite furnace		11na. AA: hydride NaBH <sub>4</sub>				
4. ICP		N =	< 5	8	6	5
		Minimum =		0.0	0.0	0.9
		Maximum =		3.0	20.0	1.5
		Median =		0.7	2.8	1.2
		F-pseudosigma =		1.0		1.7

MPV = 1.3  
F-pseudosigma = 1.4  
N = 24  
Hu = 2.3  
HI = 0.4

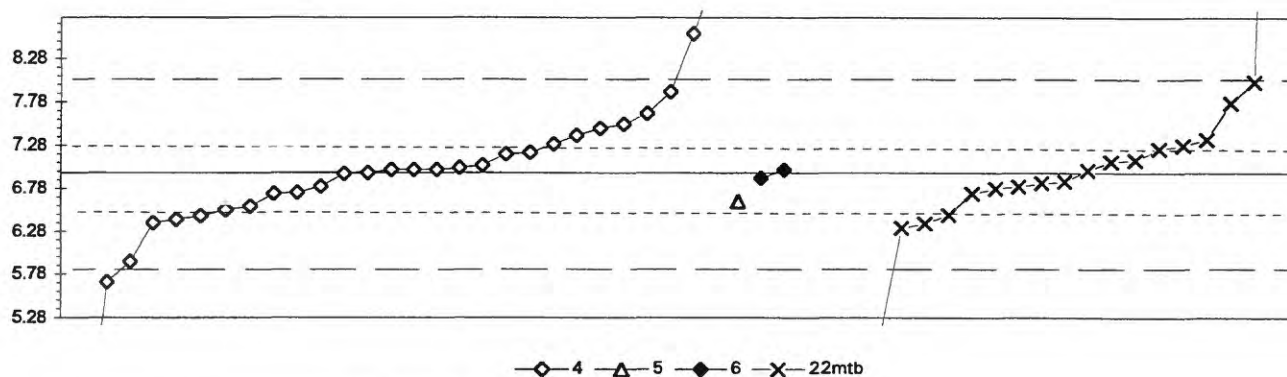
Lab	Rating	Z-value	0	3	4	6	11na
3	NR				< 5		
5	NR				< 30		
8	NR						< 0.1
13	NR		< 5				
16	NR		< 10				
18	NR		< 1				
24	4	0.17		1.5			
25	NR		< 5				
26	NR						< 0.8
28	3	0.90			2.5		
34	3	-0.81					0.2
36	NR			< 2			
39	4	0.31					1.7
48	NR			< 2			
50	NR						< 1
59	NR					< 5	
61	2	1.28			3.0		
68	4	-0.27		0.9			
69	NR			< 5			
70	NR			< 5			
73	0	4.48			7.4		
75	NR						< 1
80	2	1.26		3.0			
81	4	-0.20			1.0		
85	0	3.40					5.9
87	NR						< 2
89	3	0.55					2.0
96	NR			< 1			
97	NR	-0.93		0.0			
100	NR			< 200			
102	NR				< 2		
105	NR					< 7	
107	NR			< 5			
109	3	-0.78		0.2			
113	NR			< 1			
118	NR			< 2			
119	NR						< 1
120	3	-0.81					0.2
128	4	0.02				1.3	
133	NR		< 5				
138	NR			< 1			
141	NR			< 5			
142	4	-0.22				1.0	
144	NR			< 2			
146	NR				< 10		
149	NR			< 2			
180	NR				< 50.1		
191	4	-0.02				1.2	
193	NR			< 5			
196	4	-0.29				0.9	

Lab	Rating	Z-value	0	3	4	6	11na
203	NR			< 5			
211	4	0.39		1.8			
212	NR			< 5			
221	3	-0.56		0.5			
224	NR	-0.93			0.0		
231	NR			< 1			
234	3	-0.69		0.3			
235	4	0.17					1.5
236	0	13.69			20.0		
247	NR					< 1	

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

SiO<sub>2</sub> (Silica)

mg/L



4. ICP	22mtb. Color: methyl thymol blue				
5. DCP					
6. ICP/MS					
	N =	28	1	2	21
	Minimum =	3.33	6.63	6.90	1.35
	Maximum =	9.26		7.00	15.00
	Median =	7.00			6.84
	F-pseudosigma =	0.59			0.64

MPV = 6.96  
F-pseudosigma = 0.56  
N = 52  
Hu = 7.26  
Hi = 6.50

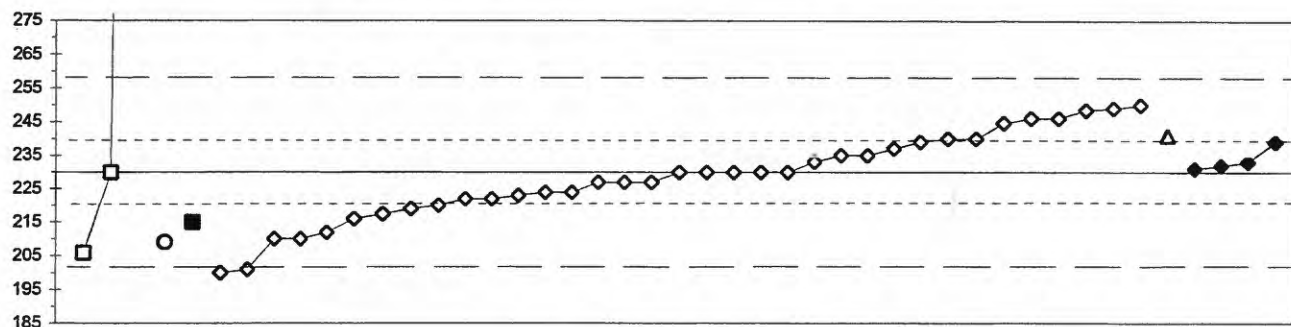
Lab	Rating	Z-value	4	5	6	22mtb
3	2	1.02	7.53			
4	4	0.43	7.20			
5	4	-0.42	6.72			
8	0	-5.60				3.80
13	4	0.17	7.05			
24	4	-0.40	6.73			
25	0	4.09	9.26			
28	0	-2.25	5.69			
32	4	0.08			7.00	
33	3	-0.58		6.63		
36	0	14.28				15.00
39	3	0.93	7.48			
42	3	0.61	7.30			
43	4	0.08	7.00			
81	0	-6.43	3.33			
64	3	-0.68	6.57			
70	3	-0.86				6.47
83	2	-1.02	6.38			
87	3	0.58				7.28
89	4	-0.20				6.84
97	4	0.24				7.09
100	2	1.23	7.65			
102	0	2.87	8.57			
104	0	-9.95				1.35
105	3	-0.95	6.42			
107	4	-0.31				6.78
110	1	1.87				8.01
111	4	-0.28				6.80
113	4	-0.17				6.86
116	4	-0.01	6.95			
118	2	1.45				7.77
119	4	0.08	7.00			
121	3	-0.88	6.46			
128	3	-0.75	6.53			
129	4	-0.42				6.72
134	4	0.01	6.96			
138	4	0.28				7.11
140	4	0.06				6.99
141	2	-1.04				6.37
142	1	1.68	7.90			
145	4	0.40	7.18			
190	0	-6.59				3.24
191	4	-0.10			6.90	
203	2	-1.13				6.32
204	3	0.70				7.35
211	0	-3.58				4.94
212	3	0.79	7.40			
217	4	-0.28	6.80			
219	4	0.08	7.00			
231	3	0.51				7.24

Lab	Rating	Z-value	4	5	6	22mtb
234	4	0.12	7.02			
236	1	-1.83	5.93			



**Table 11.** -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

**Sr (Strontium)**  $\mu\text{g/L}$



—□— 1 —○— 2 —■— 3 —◇— 4 —△— 5 —◆— 6

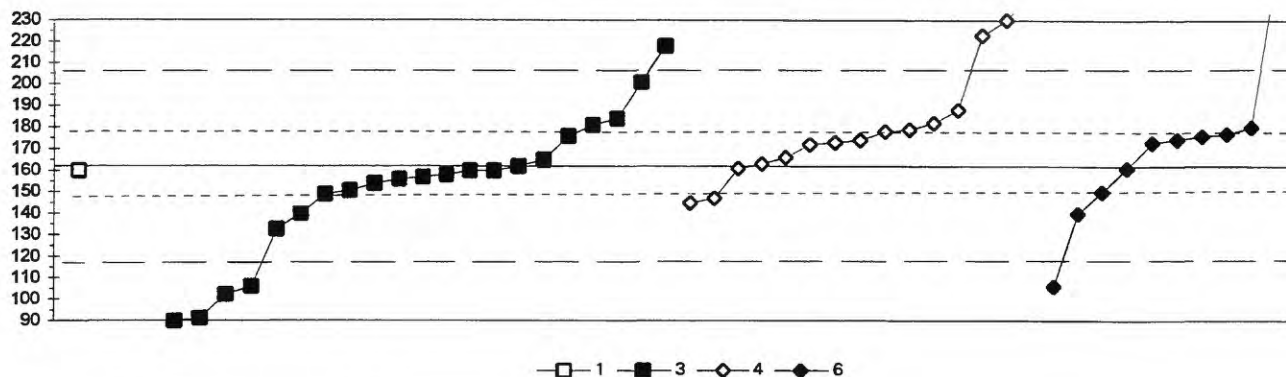
1. AA: direct air	4. ICP					
2. AA: direct nitrous oxide	5. DCP					
3. AA: graphite furnace	6. ICP/MS					
N =	3	1	1	35	1	4
Minimum =	206	209	215	200	241	231
Maximum =	837			250		239
Median =				230		233
F-pseudosigma =				13		

MPV = 230  
F-pseudosigma = 14  
N = 45  
Hu = 239  
Hi = 220

Lab	Rating	Z-value	1	2	3	4	5	6
3	2	1.14				246		
4	3	0.71				240		
5	4	0.00				230		
8	4	-0.21				227		
16	2	-1.42				210		
18	3	-0.78				219		
24	4	0.00				230		
25	3	0.64				239		
28	4	-0.50				223		
32	4	0.14						232
33	3	0.78					241	
36	0	43.10	837					
39	2	1.35				249		
40	3	-0.57				222		
42	4	0.36				235		
59	2	-1.42				210		
68	3	-0.71				220		
70	4	0.00				230		
81	3	0.71				240		
85	4	0.50				237		
86	4	0.36				235		
97	2	-1.07			215			
100	0	-2.06				201		
102	4	0.21				233		
105	3	-0.99				216		
109	1	-1.71	206					
113	4	-0.43				224		
116	2	1.14				246		
121	4	-0.43				224		
130	2	1.04				245		
134	4	-0.21				227		
138	4	-0.21				227		
142	2	1.31				248		
145	3	-0.89				217		
149	4	0.00	230					
191	4	0.21						233
196	4	0.07						231
211	0	-2.13				200		
212	4	0.00				230		
217	4	0.00				230		
218	2	-1.48		209				
219	2	1.42				250		
234	3	-0.57				222		
236	2	-1.28				212		
247	3	0.64						239

Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

Th (Thallium)  $\mu\text{g/L}$



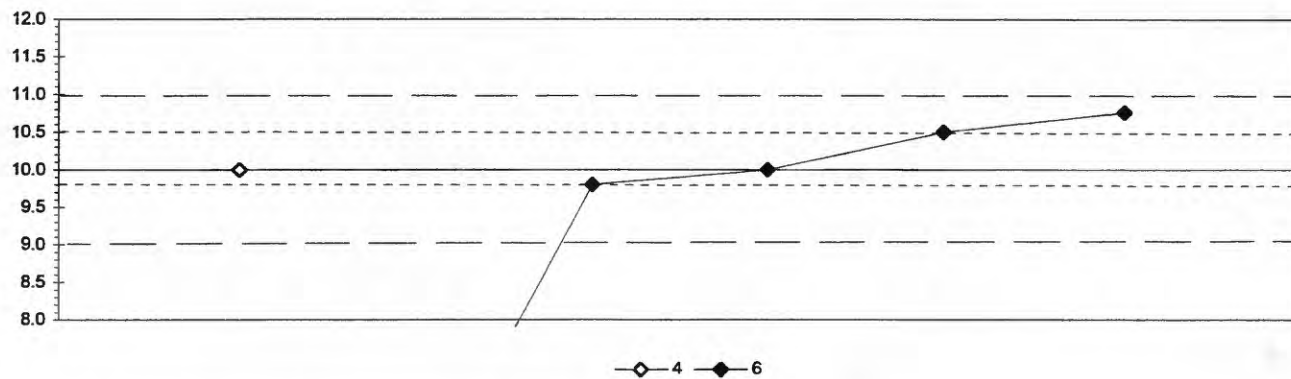
1. AA: direct air	6. ICP/MS
3. AA: graphite furnace	
4. ICP	
N =	1 24 15 10
Minimum =	160 29 145 106
Maximum =	218 243 251
Median =	155 174 174
F-pseudosigma =	44 15 20

MPV = 162  
F-pseudosigma = 23  
N = 50  
Hu = 178  
HI = 147

Lab	Rating	Z-value	1	3	4	6
3	3	0.72			178	
8	3	0.76			179	
11	2	1.15			188	
13	4	-0.15		158		
15	1	1.72		201		
16	3	0.54			174	
18	4	0.15		165		
23	0	-5.28		40		
24	2	-1.26		133		
25	0	3.55			243	
32	4	0.50				173
36	0	2.46		218		
39	0	3.89				251
40	4	0.46			172	
46	4	-0.20		157		
48	4	-0.33		154		
50	3	0.85		181		
59	4	-0.50				150
61	3	-0.63			147	
68	4	-0.47		151		
69	4	-0.24		156		
70	0	-3.12		90		
72	3	0.98		184		
85	0	2.68			223	
86	3	0.89			182	
89	0	-2.58		102		
97	3	0.63		176		
100	4	-0.07		160		
102	4	-0.03			161	
113	0	-2.42		106		
114	4	-0.07	160			
119	4	0.02		162		
121	0	-2.42				106
128	4	-0.02				161
138	3	-0.72			145	
141	0	-4.29		63		
142	3	0.56				174
146	4	0.07			163	
149	3	-0.94		140		
180	4	0.20			166	
191	3	-0.94				140
196	3	0.67				177
211	3	-0.54		149		
212	0	2.98			230	
213	0	-3.06		91		
217	3	0.81				180
234	4	0.50			173	
235	4	-0.07		160		
241	0	-5.77		29		
247	3	0.63				176

**Table 11.** -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)—Continued

**U (Uranium)** **µg/L**

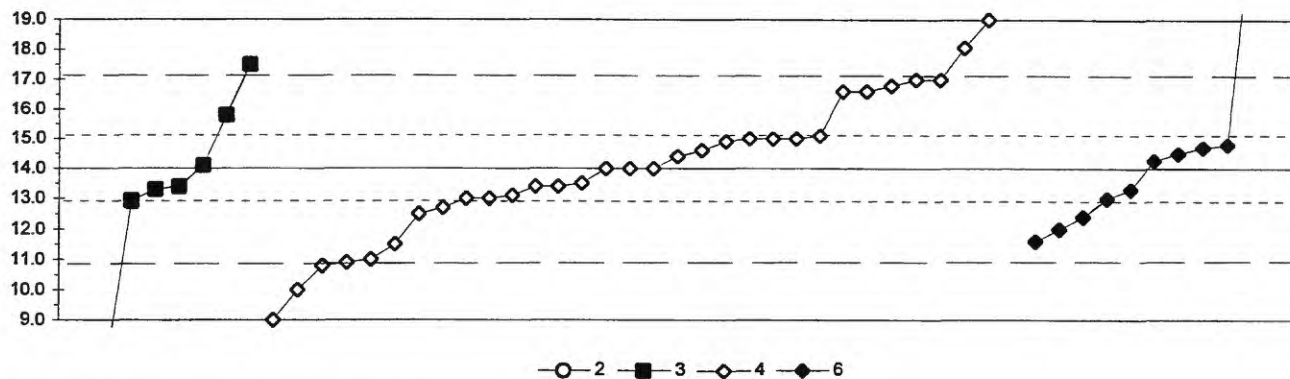


4. ICP				
6. ICP/MS				
	N =	1	5	
	Minimum =	10.0	5.5	
	Maximum =		10.8	
	Median =		10.0	
	F-pseudosigma =			

MPV = 10.0  
F-pseudosigma = 0.5  
N = 6  
Hu = 10.5  
Hl = 9.8

Lab	Rating	Z-value	4	6
16	4	0.00	10.0	
32	0	-8.67		5.5
121	4	0.00		10.0
142	2	1.46		10.8
196	3	0.96		10.5
217	4	-0.39		9.8

**Table 11.** -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued  
**V (Vanadium)** µg/L



2. AA: direct nitrous oxide	6. ICP/MS			
3. AA: graphite furnace				
4. ICP				
N =	1	7	32	10
Minimum =	53.2	7.5	9.0	11.6
Maximum =		17.5	78.0	22.4
Median =		13.4	14.0	13.8
F-pseudosiama =		1.4	2.2	1.7

MPV = 14.0  
F-pseudosigma = 1.6  
N = 50  
Hu = 15.1  
Hi = 12.9

Lab	Rating	Z-value	2	3	4	6
3	1	1.73			16.8	
8	3	0.62			15.0	
11	4	0.00			14.0	
13	NR				< 50	
15	0	-4.02		7.5		
16	4	0.00			14.0	
18	1	-1.55			11.5	
24	3	-0.56			13.1	
25	3	0.62			15.0	
26	4	-0.37			13.4	
28	0	2.52			18.1	
32	4	0.50				14.8
36	0	24.26	53.2			
39	1	1.61			16.6	
40	3	0.56			14.9	
42	3	-0.62				13.0
46	4	-0.37			13.4	
48	4	-0.43		13.3		
50	4	-0.37		13.4		
59	2	-1.49				11.6
61	4	0.25			14.4	
68	0	-2.48			10.0	
70	NR				< 50	
75	3	-0.80			12.7	
81	3	0.62			15.0	
85	NR				< 20	
86	1	1.61			16.6	
89	3	-0.67		12.9		
97	4	0.06		14.1		
100	1	-1.98			10.8	
102	4	0.37			14.6	
105	3	-0.99				12.4
121	0	5.20				22.4
128	3	0.68			15.1	
130	0	3.09			19.0	
138	3	-0.62			13.0	
141	3	-0.62			13.0	
142	4	0.16				14.3
145	1	-1.92			10.9	
146	3	-0.93			12.5	
158	4	-0.31			13.5	
180	1	1.86			17.0	
196	4	0.43				14.7
211	1	-1.86			11.0	
212	1	1.86			17.0	
217	4	0.00			14.0	
219	2	-1.24				12.0
224	0	39.60			78.0	
234	0	2.17		17.5		
235	4	-0.43				13.3

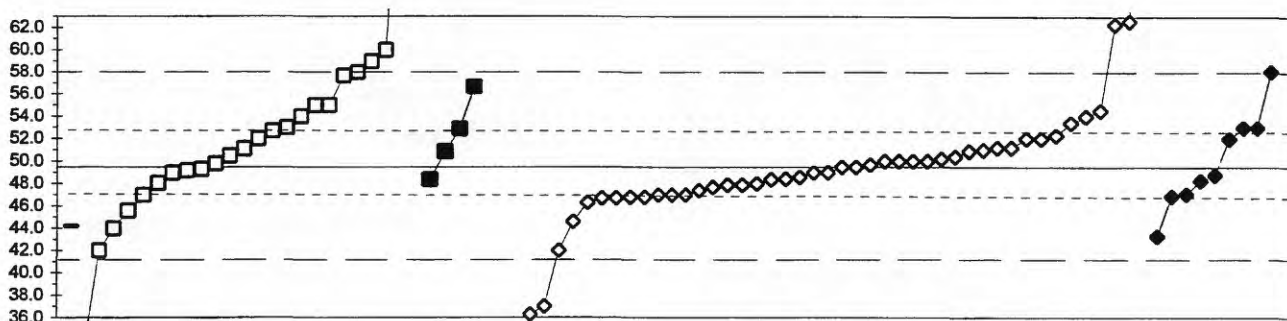
Lab	Rating	Z-value	2	3	4	6
236	0	-3.09			9.0	
241	2	1.11		15.8		
247	4	0.31				14.5



Table 11. -Statistical summary of reported data for standard reference water sample T-137 (trace constituents)-Continued

Zn (Zinc)

µg/L



— 0 — 1 — 3 — 4 — 6

0. Other	4. ICP
1. AA: direct air	6. ICP/MS
3. AA: graphite furnace	
N =	1 24 4 47 9
Minimum =	44.2 33.5 48.4 13.5 43.3
Maximum =	110.0 56.7 142.4 58.1
Median =	51.6 51.9 49.0 48.8
F-pseudosigma =	5.8 3.0 4.4

MPV = 49.5  
F-pseudosigma = 4.2  
N = 85  
Hu = 52.7  
HI = 47.0

Lab	Rating	Z-value	0	1	3	4	6
3	4	0.00				49.5	
4	NR					< 200	
5	4	-0.38				47.9	
8	0	-4.38				31.0	
10	3	0.83		53.0			
11	4	0.12				50.0	
12	4	0.12				50.0	
13	3	-0.66				46.7	
15	3	-0.76				46.3	
16	3	-0.59				47.0	
18	4	-0.43				47.7	
23	4	-0.34		48.1			
24	3	-0.64				46.8	
25	0	-10.83				< 4	
26	3	-0.59				47.0	
28	4	-0.25				48.5	
32	3	-0.62					46.9
36	1	1.94		57.7			
39	2	1.18				54.5	
42	4	0.12				50.0	
46	4	-0.12				49.0	
48	0	-6.98				20.0	
50	3	0.80			52.9		
58	0	14.32		110.0			
59	4	-0.17					48.8
61	4	0.40				51.2	
68	3	0.59				52.0	
69	1	2.01		58.0			
70	4	0.21				50.4	
72	0	21.99				142.4	
73	4	0.05				49.7	
75	3	0.92				53.4	
80	0	2.49		60.0			
81	0	-11.55				< 1	
83	3	-0.59				47.0	
85	4	0.07		49.8			
86	4	0.00				49.5	
87	4	-0.05		49.3			
89	1	1.70			56.7		
90	2	-1.30		44.0			
96	2	1.07		54.0			
97	4	-0.26			48.4		
100	4	0.24		50.5			
101	4	0.33				50.9	
102	3	-0.66				46.7	
105	2	-1.47					43.3
107	3	-0.92		45.6			
113	3	-0.64				46.8	
114	1	-1.78		42.0			
116	3	0.59				52.0	

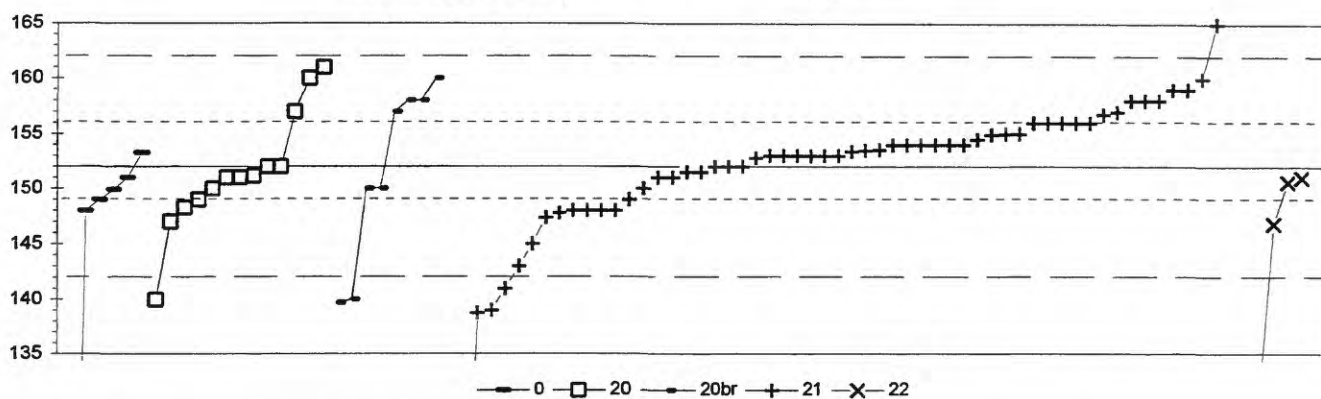
Lab	Rating	Z-value	0	1	3	4	6
118	3	0.59		52.0			
119	1	-1.78				42.0	
120	4	0.32			50.9		
121	4	-0.36				48.0	
128	0	3.10				62.6	
130	4	-0.26				48.4	
133	2	-1.25	44.2				
134	0	-8.51				13.5	
138	0	3.03				62.3	
140	4	-0.12		49.0			
141	4	0.12				50.0	
142	3	-0.57					47.1
144	3	-0.59		47.0			
145	4	0.17				50.2	
146	4	-0.50				47.4	
149	2	1.30		55.0			
158	4	-0.38				47.9	
180	0	-3.12				36.3	
190	3	0.76		52.7			
191	1	2.04					58.1
193	0	6.75		78.0			
196	4	-0.28					48.3
198	3	0.66				52.3	
203	0	-3.79		33.5			
204	4	0.40				51.2	
211	2	1.07				54.0	
212	4	0.36				51.0	
213	2	1.30		55.0			
217	4	-0.12				49.0	
219	3	0.83					53.0
221	4	-0.07		49.2			
224	4	-0.21				48.6	
231	4	0.38		51.1			
234	2	-1.16				44.6	
235	3	0.59					52.0
236	0	-2.96				37.0	
241	0	2.25		59.0			
247	3	0.83					53.0

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)

Definition of analytical methods, abbreviations, and symbols		
<u>Analytical methods</u>		
0 Other/Not reported		
1 AA: direct, air	=	atomic absorption: direct,air
2 AA: direct, N <sub>2</sub> O	=	atomic absorption: direct,nitrous oxide
3 AA: graphite furnace	=	atomic absorption: graphite furnace
4 ICP	=	inductively coupled plasma
5 DCP	=	direct current plasma
6 ICP/MS	=	mass spectrometry/inductively coupled plasma
7 IC	=	ion chromatography
12 Flame emission	=	flame emission
20 Titrate: color	=	titration: colorimetric [color reagent specified]
21 Titrate: electro	=	titration: electrometric
22 Color:	=	colorimetric [color reagent specified]
40 Ion electrode	=	ion selective electrode
41 Electro	=	electrometric: [type meter specified]
50 Gravimetric	=	gravimetric: [precipitate specified]
51 Turbidimetric	=	turbidimetric: [precipitate specified]
<u>Abbreviations and symbols</u>		
	N =	number of samples
	MPV =	most probable value
	F-pseudosigma =	nonparametric statistic deviation
	Hu =	upper hinge value
	Hi =	lower hinge value
	µg/L =	micrograms per liter
	mg/L =	milligrams per liter
	µS/cm =	microsiemens per centimeter at 25° C
	Lab =	laboratory code number
	NR =	not rated, less than value reported
	< =	less than
<u>Constituent</u>		
Alk	Alkalinity as CaCO <sub>3</sub>	64
B	Boron	65
Ca	Calcium	66
Cl	Chloride	67
DSRD	Dissolved solids	68
F	Fluoride	69
K	Potassium	70
Mg	Magnesium	71
Na	Sodium	72
total P	Phosphorus	73
pH		74
SiO <sub>2</sub>	Silica	75
SO <sub>4</sub>	Sulfate	76
Sp Cond	Specific Conductance	77
Sr	Strontium	78
V	Vanadium	79

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)-Continued

**Alkalinity (as CaCO<sub>3</sub>)** mg/L



0. Other	21. Titrate: electrometric
20. Titrate: colorimetric	22. Colorimetric
20br. Titrate: bromocresol green	
N =	6 13 8 58 4
Minimum =	81 140 140 64 131
Maximum =	153 161 160 175 151
Median =	149 151 154 153 149
F-pseudosigma =	2 4 4

MPV = 152  
F-pseudosigma = 5  
N = 89  
Hu = 156  
Hi = 149

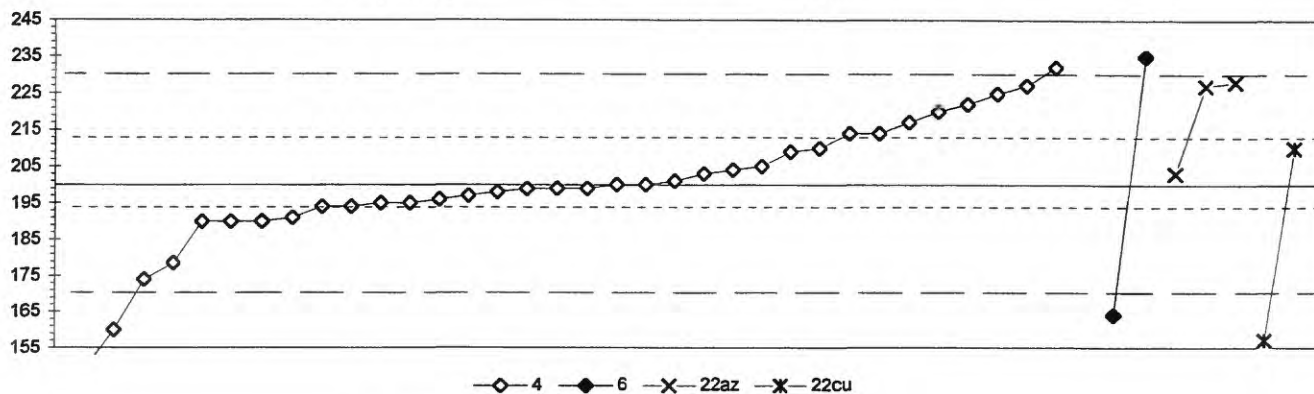
Lab	Rating	Z-value	0	20	20br	21	22
3	4	0.19				153	
5	4	0.39				154	
8	1	1.73		161			
10	4	0.00		152			
11	0	-2.51				139	
12	0	-2.12				141	
13	2	1.16				158	
15	3	-0.77				148	
16	3	-0.72		148			
18	4	-0.27					151
23	3	-0.77				148	
24	4	0.00				152	
25	3	0.96				157	
26	4	-0.10				152	
32	0	2.51				165	
33	4	0.15				153	
36	0	3.47				170	
38	3	0.56				155	
40	4	-0.19				151	
42	2	1.35				159	
43	3	0.77				156	
46	4	0.19				153	
48	0	-4.05					131
50	3	-0.77				148	
54	3	-0.58	149				
55	2	1.16				158	
56	0	4.51				175	
57	0	-2.31		140			
58	3	0.77				156	
59	4	-0.40	150				
60	4	0.27				153	
61	0	-13.66	81				
68	4	-0.19					151
69	3	-1.00					147
70	3	-0.58				149	
72	3	0.77				156	
75	4	0.39				154	
76	4	-0.39			150		
80	3	-0.96		147			
81	3	-0.58		149			
83	4	0.25	153				
84	3	-0.77	148				
85	4	-0.10				152	
87	4	0.39				154	
89	4	-0.16		151			
90	2	1.16			158		
96	4	0.48				155	
97	3	0.96		157			
100	3	0.77				156	
105	4	0.39				154	

Lab	Rating	Z-value	0	20	20br	21	22
107	1	-1.73					143
109	2	1.35					159
111	4	-0.19		151			
113	3	-0.77					148
114	3	0.58					155
116	2	-1.35					145
118	0	-2.37			140		
119	4	0.00		152			
120	4	0.19					153
122	3	0.58					155
129	2	1.16			158		
134	4	0.30					154
138	4	0.19					153
141	4	0.39					154
142	4	0.39					154
145	0	-2.31			140		
146	1	1.54					160
149	4	-0.39		150			
153	4	0.19					153
158	4	0.19					153
180	4	-0.19	151				
183	1	1.54		160			
190	4	0.00					152
191	3	0.96			157		
203	3	-0.89					147
204	4	-0.19					151
211	4	-0.19		151			
212	4	-0.39					150
213	4	0.00					152
217	3	0.77					156
218	0	-2.55					139
224	0	-16.96					64
226	3	0.92					157
231	1	1.54			160		
234	4	-0.39			150		
236	0	-9.25					104
241	2	1.16					158
244	4	0.29					154
247	3	-0.82					148

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)--Continued

**B (Boron)**

µg/L



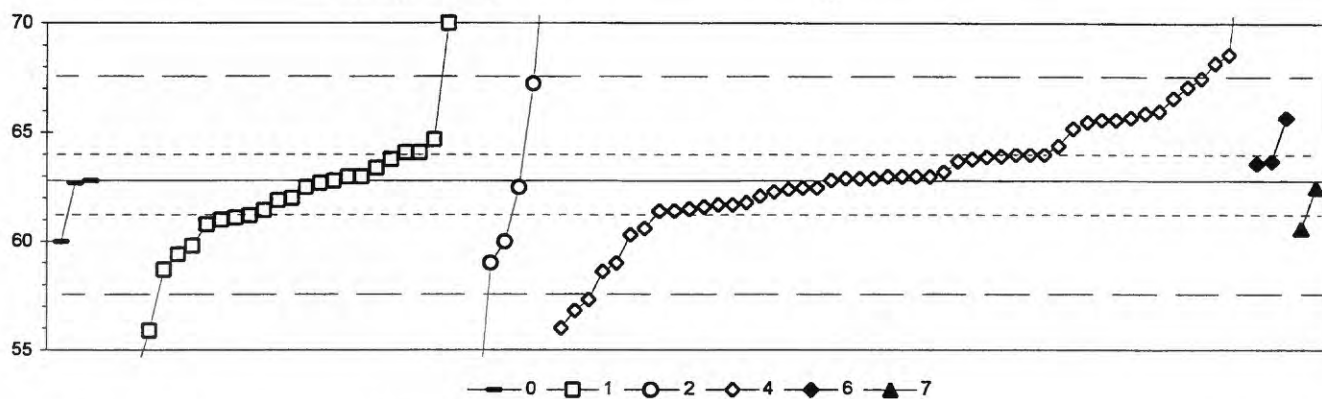
4. ICP		22cu. Color: curcumin			
6. ICP/MS					
22az. Color: azomethine					
	N =	34	2	3	2
	Minimum =	149	164	203	157
	Maximum =	232	235	228	210
	Median =	199			
	F-pseudosigma =	12			

MPV = 200  
F-pseudosigma = 15  
N = 41  
Hu = 214  
HI = 194

Lab	Rating	Z-value	4	6	22az	22cu
3	3	0.94	214			
5	4	-0.13	198			
8	4	-0.40	194			
10	3	0.67				210
11	1	1.82	227			
16	NR		< 500			
18	4	-0.07	199			
24	4	-0.34	195			
25	3	-0.61	191			
26	4	-0.07	199			
28	1	1.68	225			
32	0	2.36		235		
36	0	-2.90				157
40	3	0.67	210			
42	4	-0.34	195			
48	3	-0.67	190			
50	1	1.82			227	
57	0	-2.70	160			
61	4	0.07	201			
68	4	0.00	200			
70	4	-0.20	197			
75	4	-0.40	194			
85	4	0.34	205			
86	4	0.20	203			
116	4	0.27	204			
119	3	-0.67	190			
122	1	1.89			228	
128	0	-2.43		164		
129	4	0.20			203	
130	0	-3.47	149			
134	3	0.94	214			
141	0	2.16	232			
142	2	-1.45	179			
145	4	-0.07	199			
180	2	1.15	217			
211	4	0.00	200			
212	3	-0.67	190			
217	2	1.35	220			
219	3	0.61	209			
234	4	-0.27	196			
236	1	-1.75	174			
247	2	1.48	222			

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

**Ca (Calcium)** mg/L



0. Other	4. ICP
1. AA: direct air	6. ICP/MS
2. AA: direct nitrous oxide	7. Ion chromatography
N =	3 26 6 49 3 2
Minimum =	60.0 38.1 51.0 56.0 63.6 60.6
Maximum =	62.8 126.0 75.0 74.4 65.7 62.5
Median =	62.0 61.3 63.0
F-pseudosigma =	2.7 2.6

MPV = 62.8  
F-pseudosigma = 2.1  
N = 89  
Hu = 64.0  
HI = 61.2

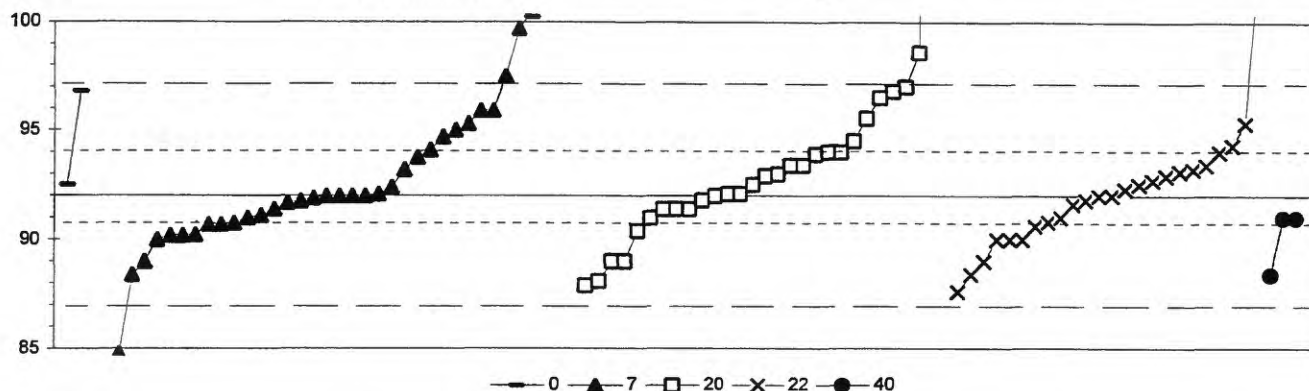
Lab	Rating	Z-value	0	1	2	4	6	7
3	2	1.35				65.6		
5	4	0.43				63.7		
8	3	-0.67				61.4		
10	4	0.48		63.8				
11	2	1.40				65.7		
12	3	0.58				64.0		
13	1	1.83				66.6		
15	1	-2.02				58.6		
16	4	0.10				63.0		
18	4	-0.34				62.1		
23	4	-0.05	62.7					
24	4	0.19				63.2		
25	0	2.79				68.6		
26	2	1.30				65.5		
28	3	0.54				63.9		
32	4	0.43					63.7	
33	4	0.00	62.8					
36	1	-1.83			59.0			
38	4	-0.14			62.5			
40	3	-0.63				61.5		
42	3	0.58				64.0		
43	4	0.10				63.0		
46	4	-0.48				61.8		
48	3	0.53				63.9		
50	1	-1.98		58.7				
54	3	-0.96		60.8				
56	0	-3.32		55.9				
57	4	0.10				63.0		
58	0	-11.90		38.1				
59	3	0.77				64.4		
61	0	5.59				74.4		
64	2	1.35				65.6		
68	3	0.58				64.0		
69	3	-0.87		61.0				
70	4	0.48				63.8		
75	3	-0.82		61.1				
80	0	3.47		70.0				
81	4	0.05				62.9		
83	1	-1.84				59.0		
84	4	0.29		63.4				
85	4	-0.14		62.5				
86	2	1.16				65.2		
87	2	-1.35			60.0			
89	3	-0.65		61.5				
90	2	-1.35	60.0					
93	0	-3.28				56.0		
97	3	-0.77		61.2				
101	0	30.45		126.0				
102	0	-2.89				56.8		
105	2	-1.20				60.3		

Lab	Rating	Z-value	0	1	2	4	6	7
107	0	-9.97		42.1				
109	2	-1.45		59.8				
111	0	5.88			75.0			
113	0	2.60				68.2		
114	0	-5.69			51.0			
116	1	1.54				66.0		
119	3	-0.53				61.7		
120	0	-4.41		53.6				
122	3	0.63		64.1				
128	2	1.40					65.7	
129	4	0.10		63.0				
130	0	2.26				67.5		
133	4	0.01				62.8		
134	4	-0.19				62.4		
138	3	-0.53				61.7		
140	4	-0.39		62.0				
141	4	0.05				62.9		
142	4	0.05				62.9		
145	4	-0.15				62.5		
146	0	-2.65				57.3		
149	3	0.63		64.1				
153	2	-1.06					60.6	
180	4	-0.24				62.3		
190	4	-0.14					62.5	
191	4	0.39					63.6	
196	4	-0.05		62.7				
211	0	2.07				67.1		
212	3	-0.58				61.6		
217	2	1.49				65.9		
218	0	2.14			67.3			
219	4	0.10				63.0		
221	4	0.00		62.8				
224	2	-1.06				60.6		
226	3	0.91		64.7				
231	1	-1.64		59.4				
234	4	-0.43		61.9				
236	3	-0.67				61.4		
241	4	0.10		63.0				
247	4	-0.15				62.5		



Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)-Continued

Cl (Chloride) mg/L



0. Other	22. Colorimetric
7. Ion chromatography	40. Ion selective electrode
20. Titrate: colorimetric	
N =	2 38 29 24 3
Minimum =	92.5 3.0 87.9 87.6 88.4
Maximum =	96.8 105.0 907.0 102.6 91.0
Median =	92.0 92.9 92.0
F-pseudosigma =	3.2 2.3 2.1

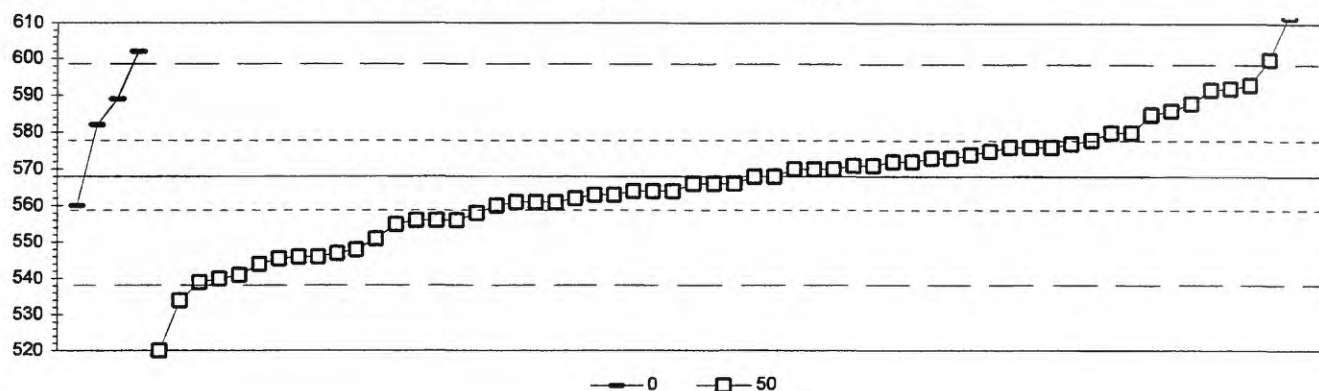
MPV = 92.0  
F-pseudosigma = 2.5  
N = 96  
Hu = 94.1  
Hi = 90.7

Lab	Rating	Z-value	0	7	20	22	40
3	4	0.49				93.2	
5	0	-36.16		3.0			
8	3	-0.81		90.0			
10	3	0.93				94.3	
11	4	-0.24			91.4		
12	2	-1.22				89.0	
13	4	-0.04		91.9			
15	0	-2.93		84.8			
16	1	-1.58			88.1		
18	0	4.31				102.6	
23	2	-1.46					88.4
24	4	0.37			92.9		
25	3	0.85		94.1			
26	4	-0.12		91.7			
28	0	-4.97		79.8			
32	1	1.58		95.9			
33	2	-1.46		88.4			
36	1	1.83			96.5		
40	3	-0.81				90.0	
42	0	5.28		105.0			
43	4	-0.41					91.0
46	4	0.12				92.3	
48	2	-1.22			89.0		
50	3	-0.81				90.0	
54	4	-0.49				90.8	
55	2	1.34				95.3	
56	1	-1.79				87.6	
57	2	-1.22			89.0		
58	0	2.68			98.6		
59	1	1.95	96.8				
60	4	-0.08			91.8		
61	0	30.88			168.0		
64	4	0.16		92.4			
68	4	-0.16				91.6	
69	4	-0.08				91.8	
70	2	1.02			94.5		
72	4	-0.41			91.0		
75	4	0.20				92.5	
76	4	-0.24		91.4			
80	1	2.03			97.0		
81	4	0.04			92.1		
83	2	1.44			95.5		
84	4	0.45				93.1	
85	3	0.81				94.0	
86	0	3.66		101.0			
87	4	0.00				92.0	
89	3	0.81			94.0		
96	4	0.37				92.9	
97	3	0.77			93.9		
100	3	-0.53		90.7			

Lab	Rating	Z-value	0	7	20	22	40
101	3	0.57				93.4	
102	4	0.00				92.0	
105	2	-1.22		89.0			
107	3	0.57				93.4	
109	4	0.41				93.0	
111	3	-0.53		90.7			
113	4	0.49		93.2			
114	4	-0.41					91.0
116	4	0.00		92.0			
119	2	1.22		95.0			
120	3	-0.81				90.0	
122	3	-0.65			90.4		
128	4	-0.37		91.1			
129	4	0.00		92.0			
134	3	0.71		93.8			
138	3	-0.73		90.2			
140	4	0.00				92.0	
141	4	-0.41				91.0	
142	4	-0.24			91.4		
143	3	0.57				93.4	
145	4	-0.50		90.8			
146	4	0.28				92.7	
149	4	0.04		92.1			
153	4	-0.41		91.0			
158	3	-0.57				90.6	
180	2	-1.46				88.4	
183	0	331.16			907.0		
190	4	0.00		92.0			
191	4	0.00		92.0			
193	2	1.10		94.7			
196	1	1.58		95.9			
203	4	-0.24			91.4		
204	4	0.04			92.1		
208	2	1.34		95.3			
211	4	0.20			92.5		
212	0	2.23		97.5			
213	1	1.95			96.8		
217	0	3.13		99.7			
221	4	0.20	92.5				
224	4	-0.09		91.8			
226	3	-0.72		90.2			
231	1	-1.67			87.9		
234	3	-0.73		90.2			
236	0	4.71		103.6			
241	3	0.81			94.0		
247	0	3.45		100.5			

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

**DSRD (Dissolved solids) mg/L**



0. Other				
50. Gravimetric				
		N =	4	61
		Minimum =	560	520
		Maximum =	602	762
		Median =	586	568
		F-pseudosigma =		15

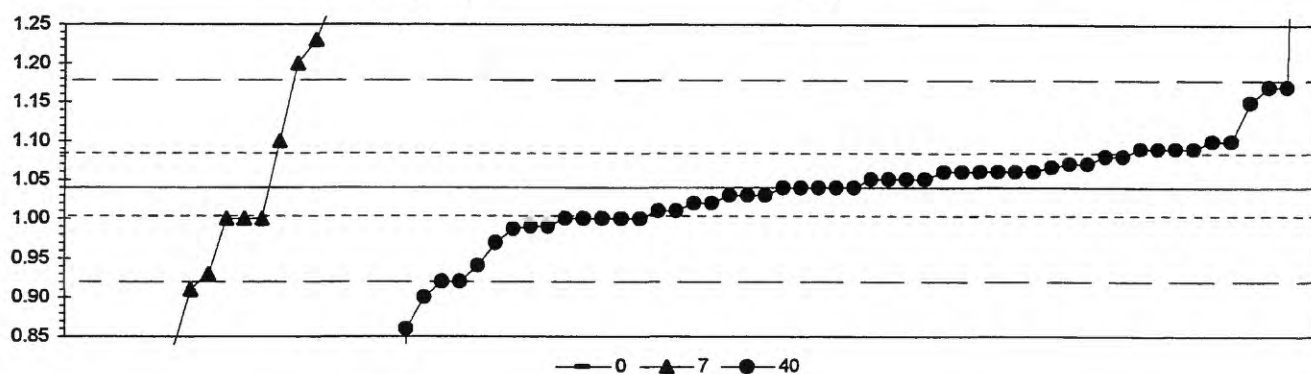
Lab	Rating	Z-value	0	50
3	4	0.13		570
5	2	1.15		585
8	4	-0.40		562
10	4	0.13		570
11	4	-0.27		564
12	2	-1.15		551
13	3	-0.67		558
15	3	-0.54		560
16	1	-1.52		546
18	4	0.47		575
23	2	1.21		586
25	2	-1.48		546
26	4	-0.13		566
32	0	3.04		613
36	3	0.81		580
38	3	-0.81		556
40	4	-0.13		566
43	3	0.54		576
46	3	0.54		576
48	3	0.81		580
50	3	0.54		576
54	4	0.00		568
55	0	-3.24		520
57	1	-1.89		540
59	0	2.29	602	
61	3	0.94	582	
69	4	0.20		571
70	4	-0.34		563
75	4	-0.47		561
76	4	-0.27		564
80	3	0.61		577
85	4	-0.27		564
87	1	-1.62		544
89	2	-1.42		547
90	0	-2.29		534
96	4	0.13		570
97	4	0.34		573
100	1	1.62		592
101	3	-0.88		555
105	0	3.24		616
109	4	0.20		571
114	0	5.19		645
116	3	-0.81		556
118	3	-0.81		556
119	4	-0.34		563
120	1	-1.82		541
122	2	-1.48		546
129	1	-1.96		539
134	1	1.69		593
138	4	0.00		568

MPV = 568  
F-pseudosigma = 15  
N = 65  
Hu = 578  
HI = 558

Lab	Rating	Z-value	0	50
140	4	-0.47		561
141	4	-0.47		561
142	1	1.60		592
146	4	0.40		574
149	4	0.34		573
158	4	0.27		572
190	3	0.67		578
211	0	2.16		600
212	4	0.27		572
217	2	1.35		588
221	2	1.42	589	
224	2	-1.35		548
234	4	-0.13		566
236	0	13.09		762
241	3	-0.54	560	

Table 12. Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

F (Fluoride) mg/L



0. Other			
7. Ion chromatography			
40. Ion selective electrode			
N =	1	16	53
Minimum =	0.78	0.20	0.12
Maximum =		1.80	2.46
Median =		1.00	1.05
F-pseudostandard =		0.29	0.33

MPV = 1.04  
 F-pseudostandard = 0.07  
 N = 70  
 Hu = 1.08  
 HI = 0.99

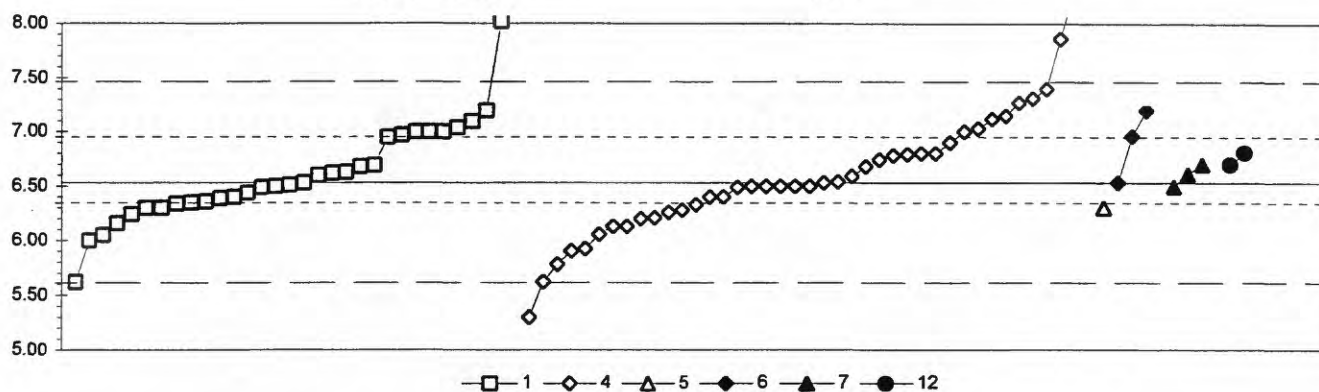
Lab	Rating	Z-value	0	7	40
3	2	-1.48			0.94
8	1	-1.95		0.91	
10	4	-0.45			1.01
11	0	-2.70			0.86
13	4	0.30			1.06
15	2	-1.05			0.97
16	4	0.45			1.07
18	4	0.15			1.05
23	4	-0.15			1.03
24	3	0.75			1.09
25	1	-1.80			0.92
26	0	-3.60		0.80	
28	0	10.19		1.72	
32	3	-0.75			0.99
36	0	-2.10			0.90
40	4	0.45			1.07
46	4	0.39			1.07
50	3	-0.60			1.00
54	4	0.30			1.06
57	3	-0.60			1.00
58	4	0.00			1.04
59	0	-3.90	0.78		
61	0	17.39			2.20
69	3	-0.60			1.00
70	4	0.30			1.06
72	0	-13.79			0.12
76	4	0.30			1.06
80	3	-0.60			1.00
81	4	0.30			1.06
83	1	1.95			1.17
84	4	0.15			1.05
85	4	0.00			1.04
89	4	0.30			1.06
93	0	21.28			2.46
96	3	0.60			1.08
97	3	0.75			1.09
100	1	1.95			1.17
102	0	2.40		1.20	
105	3	0.90		1.10	
107	4	-0.15			1.03
109	3	0.90			1.10
113	3	0.75			1.09
114	4	0.00			1.04
116	3	-0.60		1.00	
119	4	0.15			1.05
122	4	-0.15			1.03
128	1	-1.65		0.93	
129	0	-3.88		0.78	
134	4	0.15			1.05
138	4	0.00			1.04

Lab	Rating	Z-value	0	7	40
140	4	-0.45			1.01
141	3	0.75			1.09
142	3	0.90			1.10
145	0	11.39		1.80	
146	3	-0.79			0.99
149	0	2.85		1.23	
153	0	-3.15		0.83	
158	4	-0.30			1.02
180	3	-0.60			1.00
190	4	-0.30			1.02
196	4	0.00			1.04
208	0	-12.59		0.20	
211	1	1.65			1.15
212	3	-0.75			0.99
217	1	-1.80			0.92
224	0	3.72		1.29	
234	3	-0.60		1.00	
236	0	-3.60		0.80	
241	3	0.60			1.08
247	3	-0.60		1.00	

Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)--Continued

K (Potassium)

mg/L



1. AA: direct air	6. ICP/MS
4. ICP	7. Ion chromatography
5. DCP	12. Flame emission
	N = 32 41 1 3 3 2
	Minimum = 5.62 5.30 6.30 6.53 6.50 6.70
	Maximum = 9.50 13.30 7.20 6.70 6.81
	Median = 6.52 6.50
	F-pseudosigma = 0.47 0.47

MPV = 6.53  
F-pseudosigma = 0.47  
N = 82  
Hu = 6.96  
HI = 6.33

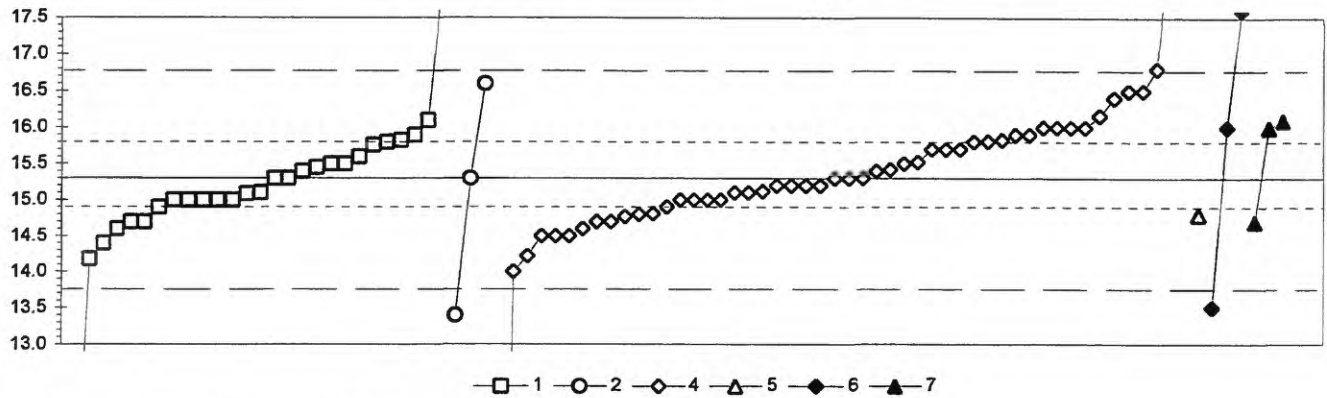
Lab	Rating	Z-value	1	4	5	6	7	12
3	4	-0.41	6.34					
5	1	-1.61		5.78				
8	4	-0.28		6.40				
10	4	0.34	6.69					
11	2	-1.35		5.90				
12	2	1.01		7.00				
13	4	0.13		6.59				
15	2	1.33		7.15				
16	4	-0.06	6.50					
18	4	-0.43		6.33				
23	3	0.94	6.97					
24	3	-0.54		6.28				
25	3	0.56		6.79				
26	2	1.26		7.12				
28	3	-0.86		6.13				
32	2	1.43				7.20		
33	4	-0.49			6.30			
36	1	-1.95	5.62					
38	4	0.19	6.62					
40	0	2.85		7.86				
42	4	-0.06		6.50				
43	4	-0.06		6.50				
46	4	-0.09		6.49				
48	3	0.54		6.78				
50	4	-0.49	6.30					
54	2	1.01	7.00					
56	3	-0.79	6.16					
57	0	6.36	9.50					
58	2	1.43	7.20					
59	3	0.58		6.80				
61	0	14.50		13.30				
68	0	-2.63		5.30				
69	3	0.60						6.81
70	3	-0.86		6.13				
75	4	-0.39	6.35					
80	2	1.01	7.00					
81	1	1.67		7.31				
83	4	-0.19	6.44					
85	2	1.22	7.10					
86	4	0.32		6.68				
87	4	-0.09	6.49					
89	4	-0.04	6.51					
97	4	0.00	6.53					
101	4	0.15	6.60					
102	1	-1.95		5.62				
105	4	0.45		6.74				
107	4	-0.49	6.30					
109	3	0.90	6.95					
111	0	3.19	8.02					
113	0	3.83		8.32				

Lab	Rating	Z-value	1	4	5	6	7	12
114	2	-1.13	6.00					
119	4	-0.06		6.50				
120	2	-1.03	6.05					
122	2	1.09	7.04					
128	4	0.00				6.53		
129	4	0.36					6.70	
130	1	1.86		7.40				
134	4	-0.28	6.40					
138	4	-0.28		6.40				
140	4	-0.36	6.36					
141	4	0.00		6.53				
142	3	-0.71		6.20				
145	3	-0.69		6.21				
146	1	1.58		7.27				
149	4	0.36						6.70
153	4	-0.06					6.50	
180	3	-0.58		6.26				
190	4	0.17					6.61	
191	3	0.92				6.96		
196	4	0.32	6.68					
211	4	-0.06		6.50				
212	4	-0.06		6.50				
217	3	0.79		6.90				
219	3	0.58		6.80				
221	4	-0.30	6.39					
224	2	-1.30		5.92				
226	4	0.21	6.63					
231	3	-0.62	6.24					
234	4	0.02		6.54				
236	2	-1.02		6.05				
241	2	1.01	7.00					
247	2	1.07		7.03				

Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

Mg (Magnesium)

mg/L



1. AA: direct air	5. DCP					
2. AA: direct nitrous oxide	6. ICP/MS					
4. ICP	7. Ion chromatography					
N =	27	3	50	1	3	3
Minimum =	10.3	13.4	1.5	14.8	13.5	14.7
Maximum =	18.0	16.6	1440		17.6	16.1
Median =	15.1		15.3			
F-pseudosigma =	0.4		0.7			

MPV = 15.3  
F-pseudosigma = 0.7  
N = 87  
Hu = 15.8  
Hi = 14.9

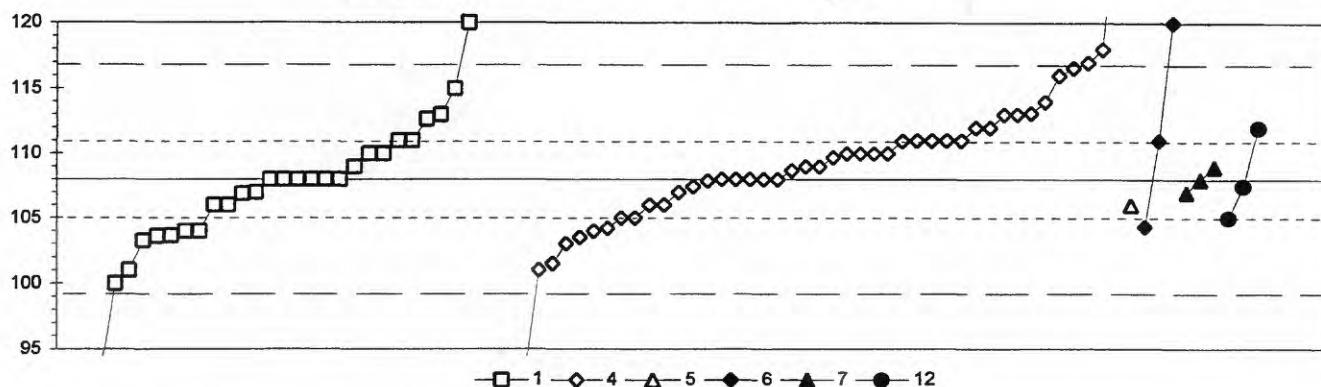
Lab	Rating	Z-value	1	2	4	5	6	7
3	1	1.66			16.5			
5	2	-1.11			14.5			
8	4	0.00			15.3			
10	4	0.28	15.5					
11	3	-0.83			14.7			
12	3	0.55			15.7			
13	4	0.14			15.4			
15	0	1971			1440			
16	0	-19.09			1.5			
18	4	-0.42			15.0			
23	3	-0.83	14.7					
24	4	-0.14			15.2			
25	1	1.66			16.5			
26	3	0.55			15.7			
28	3	0.71			15.8			
32	0	3.18					17.6	
33	3	-0.69				14.8		
36	4	-0.42	15.0					
38	3	0.64	15.8					
40	3	-0.69			14.8			
42	3	0.55			15.7			
43	4	-0.42			15.0			
46	3	-0.55			14.9			
48	3	-0.83			14.7			
50	3	0.83	15.9					
54	3	-0.83	14.7					
56	4	0.21	15.5					
57	3	0.97			16.0			
59	3	0.69			15.8			
61	0	4.70			18.7			
64	3	-0.68			14.8			
68	4	-0.42			15.0			
69	3	-0.55	14.9					
70	4	-0.28			15.1			
75	4	-0.28	15.1					
80	4	-0.42	15.0					
81	3	0.97			16.0			
83	2	-1.49			14.2			
84	4	-0.42	15.0					
85	0	-6.92	10.3					
86	3	0.83			15.9			
87	2	-1.25	14.4					
89	4	-0.29	15.1					
93	4	-0.42			15.0			
97	4	-0.42	15.0					
101	4	0.28	15.5					
102	2	-1.11			14.5			
105	1	-1.66			14.0			
107	0	3.74	18.0					
109	4	-0.42	15.0					

Lab	Rating	Z-value	1	2	4	5	6	7
111	1	1.80		16.6				
113	4	0.00			15.3			
114	0	-2.63		13.4				
116	3	0.83			15.9			
119	4	-0.28			15.1			
120	1	-1.55	14.2					
122	2	1.11	16.1					
128	0	-2.49					13.5	
129	3	0.97						16.0
130	1	1.52			16.4			
133	4	0.31			15.5			
134	4	-0.25			15.1			
138	4	-0.14			15.2			
140	4	0.14	15.4					
141	4	0.28			15.5			
142	0	2.08			16.8			
145	3	-0.73			14.8			
146	3	-0.97			14.6			
149	4	0.00	15.3					
153	2	1.11						16.1
180	4	0.00			15.3			
190	3	-0.83						14.7
191	3	0.97					16.0	
196	4	0.00	15.3					
211	3	0.97			16.0			
212	4	-0.14			15.2			
217	3	0.97			16.0			
218	4	0.00		15.3				
219	2	-1.11			14.5			
221	4	0.42	15.6					
224	2	1.19			16.2			
226	3	0.73	15.8					
231	3	0.69	15.8					
234	4	-0.14			15.2			
236	3	0.73			15.8			
241	3	-0.97	14.6					
247	4	0.17			15.4			



Table 12. Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

Na (Sodium) mg/L



1. AA: direct air	6. ICP/MS				
4. ICP	7. Ion chromatography				
5. DCP	12. Flame emission				
N =	29	46	1	3	3
Minimum =	86	86	106	104	107
Maximum =	120	129		120	109
Median =	108	109			
F-pseudosigma =	5	4			

MPV = 108  
F-pseudosigma = 4  
N = 85  
Hu = 111  
HI = 105

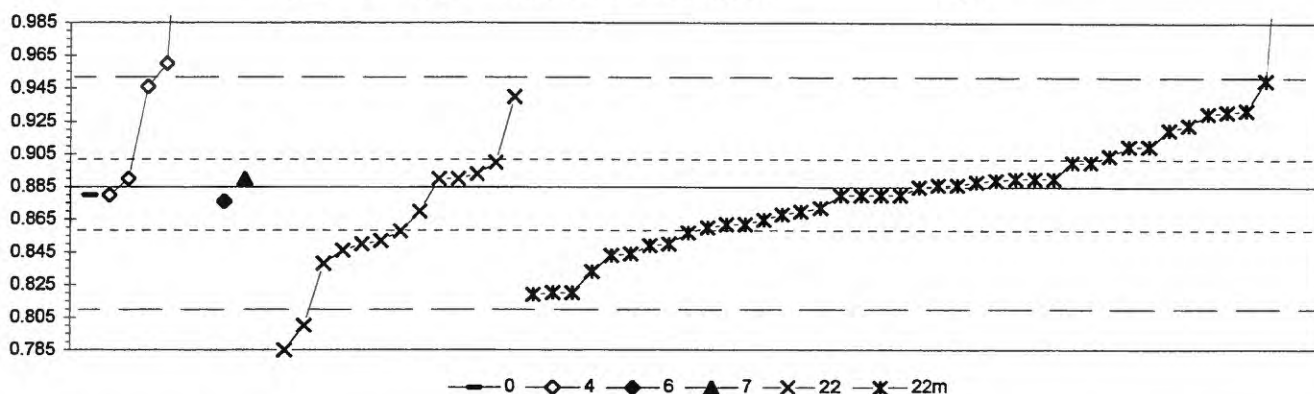
Lab	Rating	Z-value	1	4	5	6	7	12
3	0	-3.35		93				
5	4	0.00		108				
8	3	0.67		111				
10	4	0.00	108					
11	4	0.22		109				
12	0	2.25		118				
13	4	0.45		110				
15	3	0.67		111				
16	3	-0.90		104				
18	4	-0.45		106				
23	4	0.00	108					
24	4	0.22		109				
25	1	2.02		117				
26	3	0.67		111				
28	0	-4.95		86				
32	0	2.70				120		
33	4	-0.45			106			
36	4	0.45	110					
38	1	-1.57	101					
40	3	-0.67		105				
42	4	-0.22		107				
43	2	1.12		113				
46	4	0.16		109				
48	0	4.72		129				
50	3	-0.90	104					
54	4	-0.45	106					
56	3	-0.98	104					
57	4	0.45		110				
58	0	-3.60	92					
59	3	0.90		112				
61	0	-4.68		87				
64	3	-0.90	104					
68	4	0.45		110				
69	3	-0.67					105	
70	2	-1.12		103				
75	3	0.67	111					
80	1	-1.80	100					
81	1	1.80		116				
83	2	-1.46		102				
84	4	-0.11						108
85	4	0.22	109					
86	2	1.35		114				
87	4	0.00	108					
89	4	-0.25	107					
97	4	-0.22	107					
101	4	-0.45	106					
102	0	-3.44		93				
105	1	-1.57		101				
107	4	0.00	108					
109	3	-0.99	104					

Lab	Rating	Z-value	1	4	5	6	7	12
111	2	1.12	113					
113	2	-1.01		104				
114	0	-4.95	86					
116	3	0.90		112				
119	3	-0.67		105				
120	2	-1.07	103					
122	4	0.00	108					
128	3	0.67				111		
129	4	0.00					108	
130	1	1.93		117				
134	0	-3.32	93					
138	3	0.67		111				
140	3	0.67	111					
141	2	1.15		113				
142	4	0.38		110				
145	4	-0.03		108				
146	4	0.00		108				
149	3	0.90						
153	4	0.22					109	
180	4	0.00		108				112
190	4	-0.22					107	
191	3	-0.83				104		
196	1	1.57	115					
211	4	0.00		108				
212	4	0.45		110				
217	2	1.12		113				
219	4	-0.45		106				
221	0	2.70	120					
224	3	-0.85		104				
226	2	1.05	113					
231	4	0.45	110					
234	4	0.00		108				
236	4	-0.13		107				
241	4	0.00	108					
247	3	0.67		111				

Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

total P as P (total Phosphorus as Phosphorus)

mg/L



0. Other							
4. ICP							
6. ICP/MS							
	N =	1	6	1	1	14	40
	Minimum =	0.880	0.880	0.876	0.890	0.758	0.819
	Maximum =		1.472			0.940	1.100
	Median =		0.953			0.855	0.883
	F-pseudosigma =					0.039	0.030

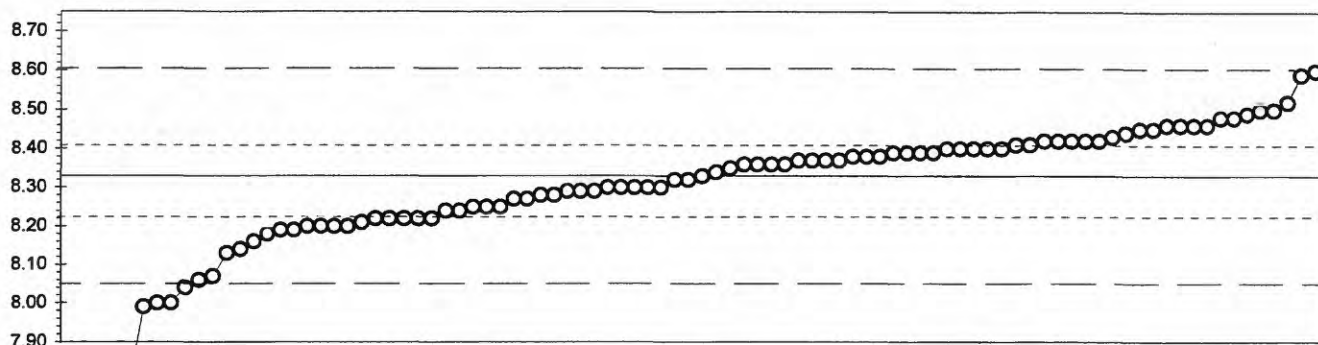
MPV = 0.885  
F-pseudosigma = 0.033  
N = 63  
Hu = 0.902  
HI = 0.858

Lab	Rating	Z-value	0	4	6	7	22	22m
3	3	-1.00					0.852	
8	1	1.97						0.950
11	3	0.76						0.910
13	2	-1.09						0.849
15	4	0.15					0.890	
16	2	-1.42					0.838	
18	4	0.03						0.886
23	1	1.67					0.940	
25	0	7.43	1.130					
28	0	17.79	1.472					
36	4	-0.15					0.880	
42	3	-0.61					0.865	
48	0	6.52					1.100	
55	2	1.15					0.923	
57	4	0.45					0.900	
58	4	-0.15					0.880	
59	4	0.45					0.900	
61	4	-0.15	0.880					
64	2	1.06					0.920	
68	2	-1.18					0.846	
70	4	0.12					0.889	
72	4	-0.15					0.880	
81	4	0.24					0.893	
83	4	0.15	0.890					
85	4	0.15					0.890	
86	1	1.85	0.946					
87	2	-1.06					0.850	
89	2	-1.06					0.850	
97	1	-1.97					0.820	
100	1	-2.00					0.819	
102	4	0.03					0.886	
105	2	1.36					0.930	
107	3	0.58					0.904	
113	3	-0.85					0.857	
114	3	0.76					0.910	
118	4	0.15					0.890	
119	4	-0.15					0.880	
120	3	-0.76					0.860	
129	1	-1.58					0.833	
134	4	0.15					0.890	
138	3	-0.70					0.862	
140	4	0.15					0.890	
141	3	-0.52					0.868	
142	2	1.39					0.931	
143	3	-0.70					0.862	
145	4	0.00					0.885	
149	4	-0.45					0.870	
153	4	0.15				0.890		
158	4	0.09					0.888	
180	2	-1.27					0.843	

Lab	Rating	Z-value	0	4	6	7	22	22m
190	3	-0.82					0.858	
191	4	-0.27			0.876			
203	2	-1.24						0.844
211	0	-2.58					0.800	
212	1	-1.97						0.820
213	4	-0.45					0.870	
217	4	0.45					0.900	
219	4	-0.15		0.880				
224	0	-3.03					0.785	
234	4	-0.39						0.872
236	0	2.27		0.960				
241	2	1.42						0.932
247	0	-3.84					0.758	

Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

pH



—O— 41

41. Direct reading

N = 92  
Minimum = 7.10  
Maximum = 8.60  
Median = 8.33  
F-pseudosigma = 0.14

MPV = 8.33  
F-pseudosigma = 0.14  
N = 92  
Hu = 8.41  
Hi = 8.22

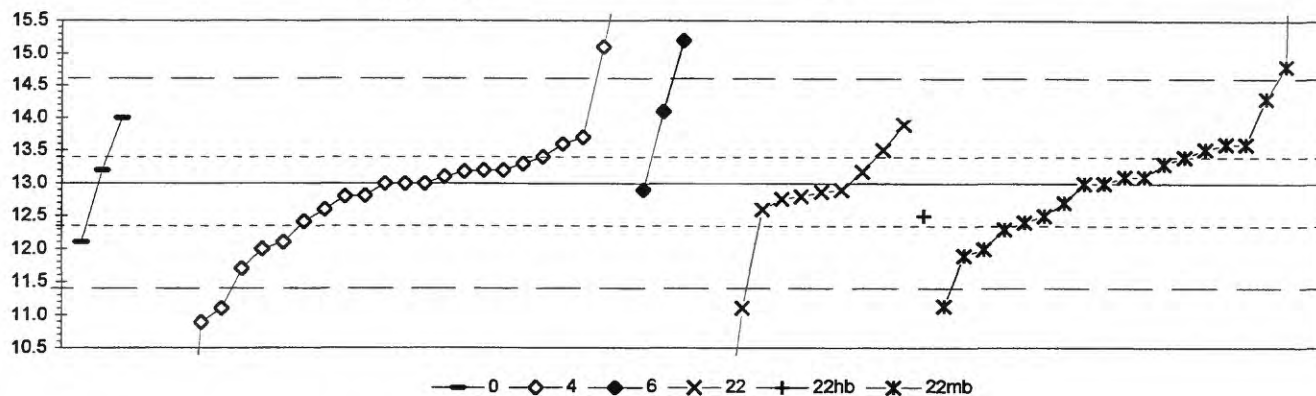
Lab	Rating	Z-value	41
3	1	-1.86	8.07
5	0	-6.74	7.40
8	3	-0.84	8.21
10	4	0.47	8.39
11	2	1.42	8.52
12	0	-2.37	8.00
13	4	0.11	8.34
15	3	-0.77	8.22
16	3	-0.91	8.20
18	4	-0.26	8.29
23	4	0.26	8.36
24	4	-0.18	8.30
25	3	0.98	8.46
26	2	1.13	8.48
28	3	-0.55	8.25
32	4	0.33	8.37
33	4	-0.18	8.30
36	3	0.62	8.41
38	2	1.28	8.50
40	4	0.47	8.39
42	0	-2.37	8.00
43	3	-0.77	8.22
48	0	-8.93	7.10
50	4	-0.18	8.30
54	4	0.33	8.37
55	3	0.98	8.46
56	3	0.77	8.43
57	3	0.55	8.40
58	4	-0.33	8.28
59	3	-0.77	8.22
61	0	-2.08	8.04
64	3	0.69	8.42
68	3	0.98	8.46
69	4	-0.40	8.27
70	4	-0.26	8.29
72	3	-0.98	8.19
75	3	0.62	8.41
76	2	1.13	8.48
80	3	-0.91	8.20
81	4	0.26	8.36
84	3	0.91	8.45
85	3	0.69	8.42
86	4	0.40	8.38
87	2	-1.06	8.18
89	4	0.40	8.38
90	4	-0.40	8.27
93	1	2.01	8.60
96	4	0.26	8.36
97	2	1.20	8.49
100	2	-1.35	8.14

Lab	Rating	Z-value	41
101	0	-6.16	7.48
105	4	-0.18	8.30
107	3	0.55	8.40
109	3	-0.77	8.22
111	4	0.47	8.39
113	3	-0.62	8.24
114	3	-0.98	8.19
118	3	-0.91	8.20
119	3	0.55	8.40
120	4	-0.04	8.32
122	4	0.33	8.37
128	3	-0.62	8.24
129	3	-0.77	8.22
134	4	0.40	8.38
138	4	0.26	8.36
140	1	1.93	8.59
141	4	0.47	8.39
142	0	-2.44	7.99
143	2	1.28	8.50
145	0	-3.83	7.80
146	3	0.84	8.44
149	4	-0.18	8.30
153	4	0.18	8.35
158	0	-4.78	7.67
180	4	0.04	8.33
183	2	-1.20	8.16
190	4	-0.33	8.28
191	3	0.69	8.42
196	3	0.69	8.42
203	3	0.98	8.46
204	3	-0.55	8.25
211	2	-1.42	8.13
212	3	0.55	8.40
213	4	-0.26	8.29
217	3	0.55	8.40
218	4	-0.04	8.32
224	3	-0.55	8.25
234	4	0.33	8.37
236	1	-1.93	8.06
241	3	-0.91	8.20
244	3	0.69	8.42
247	3	0.91	8.45

Table 12. -Statistical summary of reported data for standard reference water sample M-136 (major constituents)-Continued

SiO<sub>2</sub> (Silica)

mg/L



0. Other							
4. ICP							
6. ICP/MS							
	N =	3	25	3	11	1	19
	Minimum =	12.1	5.9	12.9	5.6	12.5	11.1
	Maximum =	14.0	16.5	15.2	13.9		29.0
	Median =		13.0		12.8		13.1
	F-pseudsigma =		0.9		0.9		0.8

MPV = 13.0  
F-pseudsigma = 0.8  
N = 62  
Hu = 13.4  
Hi = 12.3

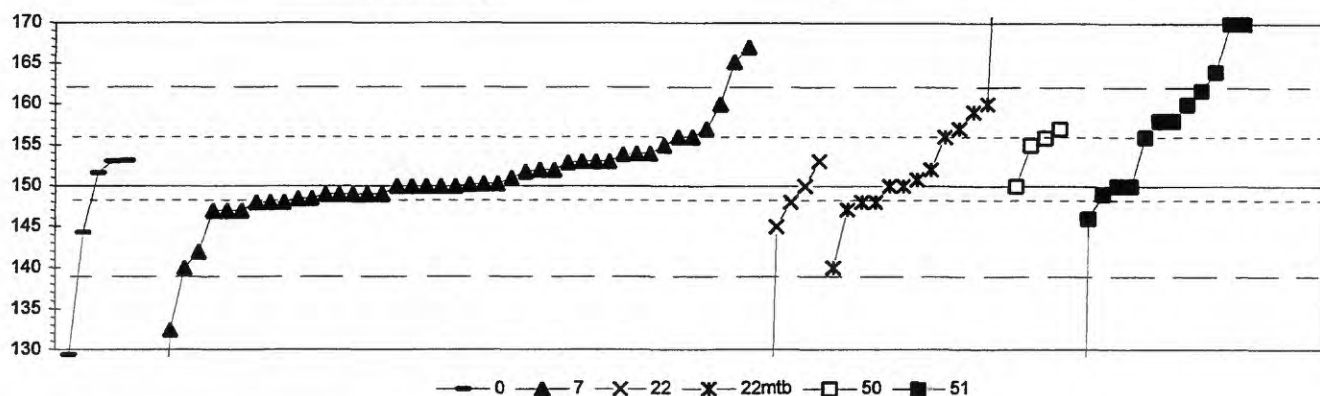
Lab	Rating	Z-value	0	4	6	22	22hb	22m
3	0	-7.87		6.6				
5	4	-0.49		12.6				
8	0	-2.33				11.1		
10	4	0.12						13.1
11	0	-8.68		5.9				
13	3	0.86		13.7				
18	3	0.74						13.6
23	4	-0.12				12.9		
24	4	0.12		13.1				
25	0	4.29		16.5				
28	0	-2.59		10.9				
32	0	2.70			15.2			
33	2	-1.10	12.1					
36	0	19.62						29.0
38	4	-0.16				12.9		
40	3	0.74		13.6				
42	4	0.37		13.3				
43	4	0.00		13.0				
46	4	-0.29				12.8		
50	3	0.74						13.6
57	2	-1.23		12.0				
59	4	0.37						13.3
61	0	-8.16		6.4				
64	3	-0.72		12.4				
68	4	-0.49				12.6		
70	2	-1.23						12.0
80	2	1.23	14.0					
83	1	-1.59		11.7				
85	4	0.00						13.0
87	2	1.10				13.9		
89	4	0.00						13.0
97	4	-0.37						12.7
102	3	-0.61						12.5
105	2	-1.10		12.1				
107	3	-0.74						12.4
111	3	-0.86						12.3
113	4	-0.25				12.8		
116	4	0.49		13.4				
118	0	2.21						14.8
119	4	0.00		13.0				
128	4	-0.12			12.9			
129	3	-0.61					12.5	
134	4	0.22		13.2				
138	4	0.49						13.4
140	3	0.63				13.5		
141	2	-1.35						11.9
142	0	2.58		15.1				
145	4	-0.23		12.8				
149	4	0.25	13.2					
190	0	-9.05				5.6		

Lab	Rating	Z-value	0	4	6	22	22hb	22m
191	2	1.35			14.1			
203	0	-2.29						11.1
204	1	1.59						14.3
211	0	-5.15				8.8		
212	4	0.00		13.0				
217	4	0.25		13.2				
219	4	-0.25		12.8				
226	3	0.64						13.5
231	4	0.12						13.1
234	4	0.25		13.2				
236	0	-2.33		11.1				
247	4	0.22				13.2		

**Table 12.** -Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

SO<sub>4</sub> (Sulfate)

mg/L



0. Other							
7. Ion chromatography							
22. Colorimetric							
	N =	5	44	5	13	4	14
	Minimum =	129	2	82	140	150	45
	Maximum =	153	167	153	199	157	180
	Median =	152	150	148	151	155	158
	F-pseudosigma =		4		7		10

Lab	Rating	Z-value	0	7	22	22mtb	50	51
3	1	-1.76		140				
5	0	-25.25		2				
8	4	-0.39		148				
10	3	0.97						156
11	4	-0.22		149				
12	0	-11.66			82			
13	4	-0.22		149				
15	4	-0.05		150				
16	0	-3.57	129					
18	3	-0.55				147		
23	4	-0.39			148			
24	4	0.29				152		
25	4	-0.22		149				
26	4	-0.05		150				
28	0	-3.05		132				
32	3	-0.56		147				
33	4	-0.31		149				
36	4	-0.05						150
40	3	0.63		154				
42	0	2.85		167				
43	4	-0.05					150	
46	3	0.63		154				
48	4	-0.22						149
50	4	-0.05				150		
54	1	1.66						160
55	4	-0.05				150		
56	1	1.95						162
57	0	3.36						170
58	2	1.14						157
59	4	0.22	152					
61	4	-0.05			150			
64	4	0.29		152				
69	4	-0.39				148		
70	4	0.46		153				
72	0	5.07						180
75	2	1.49				159		
76	3	0.97			156			
80	0	8.32				199		
83	2	-1.02	144					
85	4	-0.39		148				
86	1	1.66		160				
87	3	-0.91			145			
89	4	-0.05						150
97	1	-1.76				140		
100	2	1.14		157				
102	1	1.66				160		
105	4	-0.02		150				
109	3	0.96					156	
111	2	-1.42		142				
113	4	0.46		153				

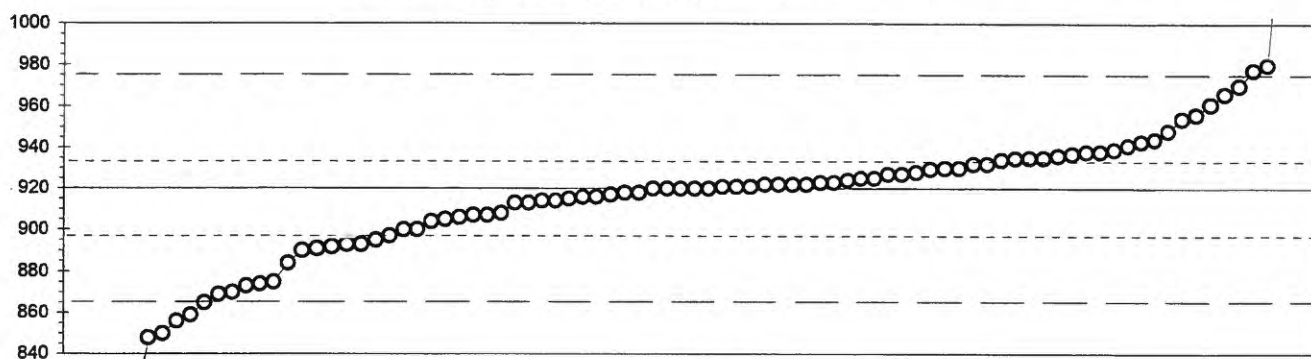
MPV = 150  
F-pseudosigma = 6  
N = 85  
Hu = 156  
Hi = 148

Lab	Rating	Z-value	0	7	22	22mtb	50	51
114	2	1.31						158
116	0	-11.61		62				
119	3	0.80		155				
122	3	0.80					155	
128	3	-0.56		147				
129	4	-0.22		149				
134	4	0.44		153				
138	4	-0.05		150				
140	0	2.34						164
141	0	3.36						170
142	2	1.14				157		
145	4	0.00		150				
146	2	1.31						158
149	4	0.46		153				
153	4	-0.22		149				
156	4	0.46			153			
180	3	0.97				156		
190	4	-0.05		150				
191	4	-0.05		150				
193	4	0.12		151				
196	3	-0.56		147				
203	4	0.08				151		
204	4	-0.39				148		
208	3	0.61		154				
211	4	0.46	153					
212	3	0.97		156				
217	4	-0.39		148				
221	4	0.48	153					
224	4	0.25		152				
226	4	-0.31		148				
231	3	-0.73						146
234	4	0.29		152				
236	4	0.00		150				
241	0	-17.98						45
247	0	2.54		165				



**Table 12.** Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

Sp Cond (Specific Conductance)  $\mu\text{S}/\text{cm}$



—○— 41

41. Direct reading

N = 89  
Minimum = 626  
Maximum = 1410  
Median = 920  
F-pseudsigma = 27

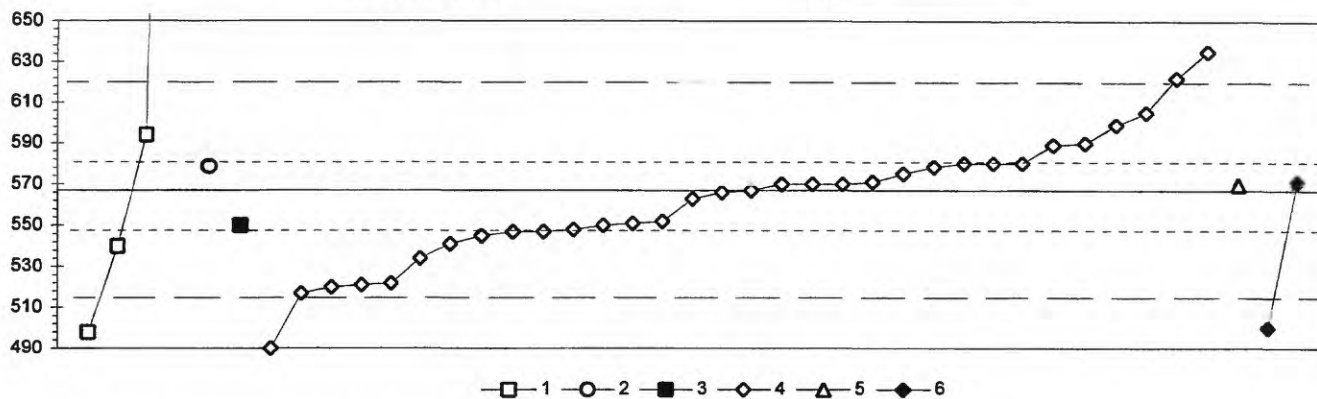
MPV = 920  
F-pseudsigma = 27  
N = 89  
Hu = 934  
Hl = 897

Lab	Rating	Z-value	41
3	4	0.07	922
5	0	5.21	1063
8	1	-1.68	874
10	4	0.18	925
11	0	-4.78	789
12	0	-2.63	848
13	0	2.19	980
15	2	1.31	956
16	3	0.54	935
18	1	-1.71	873
23	0	-7.95	702
24	4	0.00	920
25	3	0.69	939
26	4	-0.22	914
28	4	-0.47	907
32	3	-0.98	893
33	4	0.00	920
36	0	-2.22	859
36	0	2.10	978
40	4	0.11	923
42	4	-0.22	914
43	4	0.04	921
46	4	-0.44	908
48	4	0.07	922
50	4	0.00	920
54	3	-0.73	900
55	2	-1.09	890
56	0	-4.34	801
57	1	1.82	970
58	3	-0.98	893
59	2	1.24	954
61	0	17.87	1410
64	0	-2.55	850
68	4	0.04	921
70	2	1.49	961
72	4	0.44	932
75	4	-0.11	917
76	3	0.51	934
80	4	-0.07	918
81	3	0.77	941
84	4	0.36	930
85	4	0.26	927
86	2	1.02	948
87	3	0.84	943
89	3	-0.58	904
90	3	0.55	935
96	4	0.35	930
97	3	0.58	936
100	4	0.15	924
101	4	0.07	922

Lab	Rating	Z-value	41
102	0	4.89	1054
105	3	0.66	938
107	4	0.00	920
109	4	-0.26	913
111	3	-0.91	895
113	4	-0.15	916
114	1	1.68	966
116	0	-4.19	805
118	3	-0.51	906
119	2	-1.06	891
122	4	0.00	920
126	4	0.11	923
129	2	-1.02	892
134	4	0.44	932
140	3	-0.84	897
141	4	0.29	928
142	4	0.04	921
143	0	-2.33	856
145	3	0.88	944
146	3	-0.55	905
149	4	0.26	927
153	1	-2.01	865
158	4	0.36	930
180	4	0.18	925
190	4	-0.07	918
193	4	-0.47	907
196	3	0.62	937
203	4	-0.26	913
204	1	-1.64	875
211	2	-1.31	884
212	1	-1.86	869
217	4	-0.18	915
218	4	0.07	922
224	3	-0.73	900
234	3	0.55	935
236	1	-1.82	870
241	0	-10.72	626
244	4	-0.15	916
247	3	0.66	938

Table 12. Statistical summary of reported data for standard reference water sample M-136 (major constituents)—Continued

Sr (Strontium)  $\mu\text{g/L}$



1. AA: direct air	4. ICP
2. AA: direct nitrous oxide	5. DCP
3. AA: graphite furnace	6. ICP/MS
N =	4 1 1 32 1 2
Minimum =	498 579 550 490 570 500
Maximum =	1360 635 567 571
Median =	546 25
F-pseudosigma =	

MPV = 567  
F-pseudosigma = 26  
N = 41  
Hu = 580  
Hl = 545

Lab	Rating	Z-value	1	2	3	4	5	6
3	0	2.62				635		
5	4	0.43				578		
8	4	-0.15				563		
11	4	-0.04				566		
16	1	-1.93				517		
18	3	-0.77				547		
23	2	1.04	594					
24	4	0.15				571		
25	2	1.23				599		
28	3	-0.77				547		
32	0	-2.58						500
33	4	0.12					570	
36	0	30.56	1360					
40	3	-0.58				552		
42	4	0.12				570		
59	3	-0.66				550		
68	4	0.12				570		
70	3	-0.73				548		
81	4	0.50				580		
85	4	0.50				580		
86	4	0.31				575		
97	3	-0.66			550			
102	0	-2.97				490		
105	1	-1.77				521		
109	0	-2.66	498					
113	0	2.12				622		
116	2	1.46				605		
130	3	0.85				589		
134	3	-1.00				541		
138	3	-0.62				551		
145	1	-1.74				522		
149	2	-1.04	540					
191	4	0.15						571
211	4	0.50				580		
212	1	-1.81				520		
217	3	0.89				590		
218	4	0.45		579				
219	4	0.12				570		
234	3	-0.85				545		
236	2	-1.27				534		
247	4	0.00				567		

**V (Vanadium)**



Lab	Rating	Z-value	0	2	3	4	6
3	4	-0.28				6.5	
8	4	0.07				7.0	
11	4	0.07				7.0	
13	NR					< 50	
16	3	0.92				8.2	
18	2	-1.34				5.0	
23	1	2.03			9.8		
25	2	-1.35				5.0	
26	4	-0.24				6.6	
28	0	2.63				10.6	
32	4	0.07					7.0
36	0	56.09		85.9			
42	3	-0.64					6.0
46	4	-0.30				6.5	
48	NR					< 200	
57	NR					< 100	
59	1	1.85					9.5
61	3	0.52				7.6	
68	3	0.71				7.9	
70	NR					< 50	
81	2	-1.35				5.0	
85	NR					< 20	
86	0	2.49				10.4	
89	1	-1.68	4.5				
97	4	0.28			7.3		
102	3	-0.64				6.0	
105	NR					< 12	
128	4	0.00					6.9
130	0	3.91				12.4	
134	4	-0.41				6.3	
138	3	-0.64				6.0	
141	NR					< 10	
142	0	2.27					10.1
145	0	-3.98				< 1.3	
146	3	-0.96				5.6	
180	4	0.28				7.3	
211	NR					< 10	
212	4	0.00				6.9	
219	3	-0.64				6.0	
224	0	-4.77				0.2	
234	4	0.40			7.5		
236	3	-0.64				6.0	
241	3	-0.78			5.8		
247	NR					< 20	

MPV = 6.9

F-pseudosigma = 1.4

N = 34

Hu = 7.9

HI = 6.0

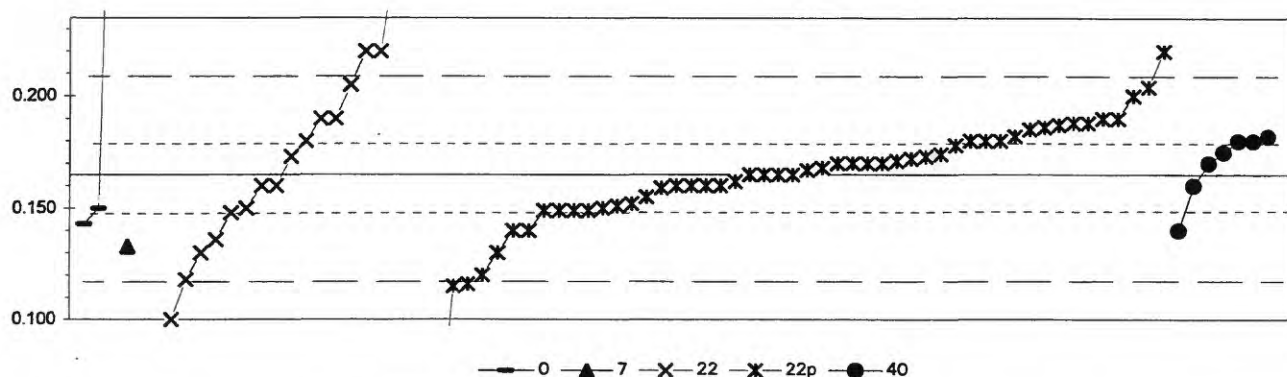
**Table 13.** -Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)

Definition of analytical methods, abbreviations, and symbols		
<u>Analytical methods</u>		
0. Other/Not reported		
4. ICP	=	inductively coupled plasma
5. DCP	=	direct coupled plasma
7. IC	=	ion chromatography
20. Titrate: color	=	titration: colorimetric (color reagent specified)
22. Color:	=	colorimetric [color reagent specified]
40. Ion electrode	=	ion selective electrode
<u>Abbreviations and symbols</u>		
N	=	number of samples
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hi	=	lower hinge value
mg/L	=	milligrams per liter
Lab	=	laboratory code number
NR	=	not rated, less than value reported
<	=	less than
<u>Constituent</u>		<u>page</u>
NH <sub>3</sub> as N	Ammonia as nitrogen	81
NH <sub>3</sub> +Org N as N	Ammonia plus organic nitrogen	82
NO <sub>3</sub> +NO <sub>2</sub> as N	Nitrate plus nitrite as nitrogen	83
Total P as P	Total Phosphorus as phosphorus	84
PO <sub>4</sub> as P	orthophosphate as phosphorus	85

Table 13. Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)—Continued

NH<sub>3</sub> as N (Ammonia)

mg/L



0. Other	22p. Color: phenate				
7. Ion chromatography	40. Ion selective electrode				
22. Colorimetric					
N =	3	1	18	51	7
Minimum =	0.143	0.133	0.070	0.044	0.140
Maximum =	0.410		0.267	0.220	0.182
Median =			0.160	0.165	0.175
F-pseudosioma =			0.044	0.022	0.011

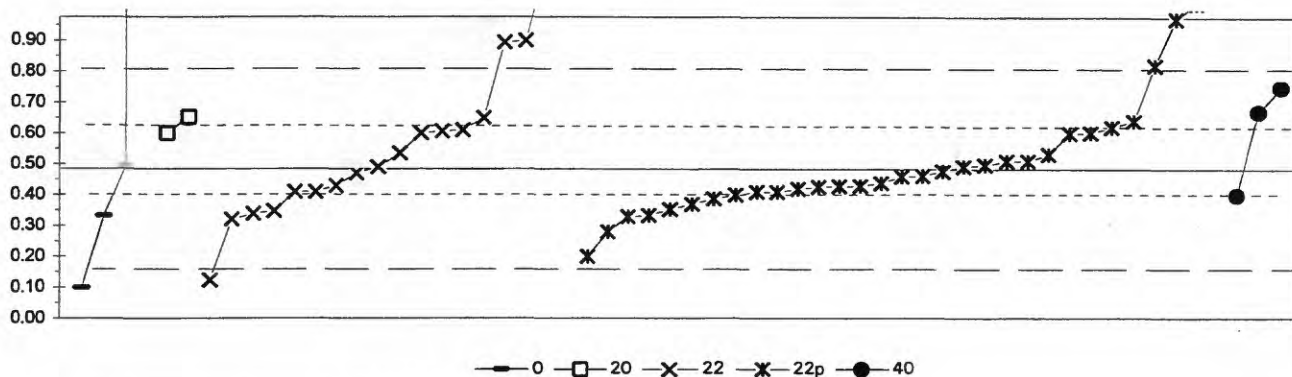
MPV = 0.165  
F-pseudsigma = 0.023  
N = 80  
Hu = 0.180  
HI = 0.149

Lab	Rating	Z-value	0	7	22	22p	40
3	4	0.35			0.173		
7	3	-0.65			0.150		
8	NR		< 1				
10	4	0.44				0.175	
11	0	2.39				0.220	
13	4	0.39				0.174	
15	1	-2.05		0.118			
16	3	-0.96	0.143				
18	4	0.35			0.173		
21	3	-0.61			0.151		
23	3	-0.70			0.149		
25	0			< 0.07			
32	2	-1.39		0.133			
33	3	0.65			0.180		
36	3	0.65				0.180	
38	4	-0.13			0.162		
39	0	-2.13			0.116		
46	4	0.13			0.168		
48	2	-1.09			0.140		
53	0	2.39			0.220		
55	3	0.91			0.186		
57	0					< 0.05	
59	1	-1.52			0.130		
60	4	-0.44			0.155		
61	3	-0.65	0.150				
64	3	0.65			0.180		
68	4	-0.22		0.160			
70	2	1.09			0.190		
72	1	-1.96			0.120		
76	4	-0.22			0.160		
81	2	-1.26		0.136			
83	4	0.22			0.170		
84	0	-2.18			0.115		
85	4	0.22			0.170		
86	3	0.96			0.187		
87	0	-4.13		0.070			
88	3	-0.70			0.149		
89	4	0.22			0.170		
90	4	0.09			0.167		
91	4	0.22			0.170		
93	3	1.00			0.188		
96	4	0.00			0.165		
97	4	0.00			0.165		
100	0	10.66	0.410				
102	2	1.09			0.190		
104	3	-0.70			0.149		
105	4	-0.22		0.160			
107	4	0.00			0.165		
111	3	-0.65			0.150		
114	4	0.22				0.170	

Lab	Rating	Z-value	0	7	22	22p	40
118	1	1.52				0.200	
119	3	0.65					0.180
120	0	-6.44				0.017	
121	3	-0.70				0.149	
122	4	-0.22				0.160	
128	4	0.26				0.171	
129	0	4.44			0.267		
134	3	0.65			0.180		
138	4	-0.26				0.159	
140	1	-1.52			0.130		
141	3	0.57				0.178	
142	3	-0.57				0.152	
143	4	-0.22				0.160	
145	3	0.87				0.185	
146	3	1.00				0.188	
158	1	1.70				0.204	
180	4	0.30				0.172	
190	2	1.09			0.190		
197	3	-0.74			0.148		
203	3	0.74				0.182	
204	4	-0.22				0.160	
211	2	1.09			0.190		
212	0	-2.83			0.100		
213	1	1.74			0.205		
217	2	-1.09				0.140	
221	3	0.65				0.180	
224	0	-5.27				0.044	
226	4	0.00				0.165	
231	0	2.39			0.220		
234	3	0.74					0.182
240	4	-0.22					0.160
241	2	-1.09					0.140
247	0	-3.17			0.092		



**Table 13.** Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)—Continued  
**NH<sub>3</sub> + Org N as N (Ammonia + Organic N)** mg/L



0. Other	22p. Color: phenate					
20. Titrate: colorimetric	40. Ion selective electrode					
22. Colorimetric						
	N =	4	2	18	31	3
	Minimum =	0.10	0.60	0.12	0.20	0.40
	Maximum =	41.70	0.65	1.32	1.40	0.75
	Median =			0.51	0.46	
	F-pseudosigma =			0.18	0.12	

Lab	Rating	Z-value	0	20	22	22p	40
3	2	1.03		0.65			
8	NR			< 1			
10	4	-0.33				0.43	
11	0	2.55			0.90		
12	3	0.71				0.60	
16	3	-0.92	0.33				
18	4	-0.15				0.46	
21	4	0.08				0.50	
25	0	-2.54			< 0.07		
28	0	-2.35	0.10				
36	NR					< 0.5	
38	2	-1.01			0.32		
46	4	-0.45				0.41	
48	0	2.98				0.97	
55	4	-0.28				0.44	
56	4	-0.09			0.47		
57	3	0.71		0.60			
59	3	-0.52				0.40	
60	3	-0.88			0.34		
61	0	252.73	41.70				
68	4	-0.33			0.43		
70	0	3.29				1.02	
72	2	-1.25				0.28	
81	0	2.51			0.89		
85	4	0.16				0.51	
87	4	0.04			0.49		
89	3	0.83				0.62	
90	3	-0.92				0.33	
91	4	-0.39				0.42	
96	4	-0.04				0.48	
97	4	-0.34				0.43	
100	4	0.04	0.49				
102	1	-1.74				0.20	
104	3	-0.59				0.39	
105	0	5.13			1.32		
113	NR					< 0.5	
118	3	0.96				0.64	
119	2	1.14					0.67
120	4	-0.13				0.46	
121	3	-0.80				0.35	
122	3	-0.94				0.33	
128	4	-0.35				0.43	
129	0	4.15			1.16		
134	4	-0.45			0.41		
138	4	0.16				0.51	
140	3	0.71			0.60		
141	NR					< 1	
142	4	0.29				0.53	
145	3	-0.70				0.37	
149	0	-2.36					< 0.1

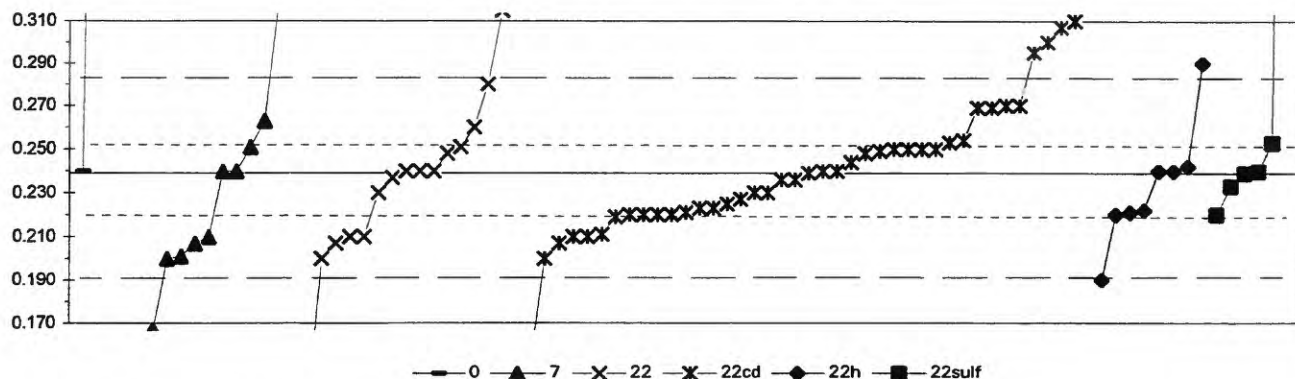
MPV = 0.48  
F-pseudosigma = 0.16  
N = 58  
Hu = 0.62  
Hi = 0.40

Lab	Rating	Z-value	0	20	22	22p	40
158	1	1.63					0.75
180	4	0.05				0.49	
185	3	0.75			0.61		
190	3	0.77			0.61		
203	4	0.31			0.54		
211	4	-0.45			0.41		
212	2	1.02			0.65		
213	3	-0.84			0.35		
217	4	-0.45				0.41	
221	0	2.06				0.82	
224	0	5.59				1.40	
226	3	0.72				0.60	
241	3	-0.52					0.40
247	0	-2.22			0.12		

**Table 13. -Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)—Continued**

**NO<sub>3</sub> + NO<sub>2</sub> as N (Nitrate + Nitrite)**

**mg/L**



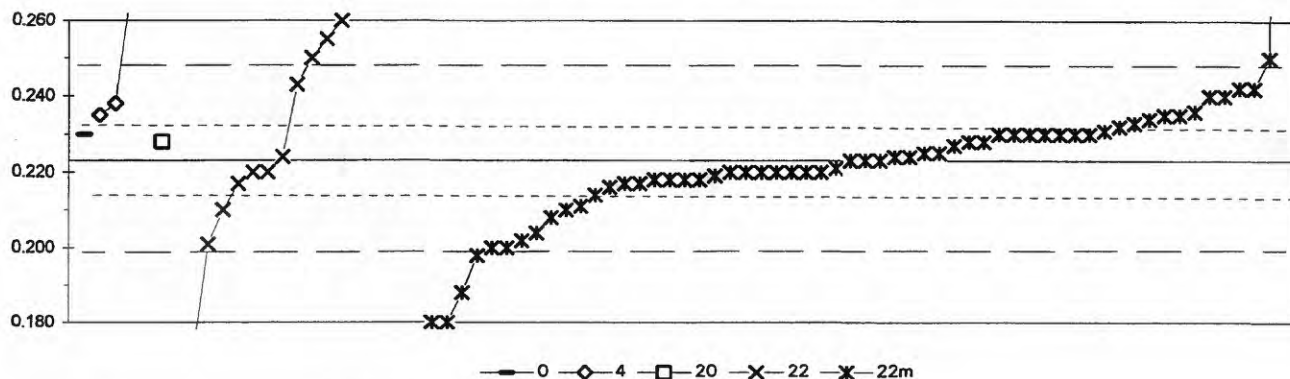
0. Other							
7. Ion chromatography							
22. Colorimetric							
	N =	2	14	15	42	8	6
	Minimum =	0.240	0.010	0.130	0.123	0.190	0.220
	Maximum =	0.707	1.060	0.315	1.100	0.290	0.748
	Median =		0.209	0.240	0.238	0.231	0.240
	F-pseudosigma =		0.062	0.029	0.024	0.015	

MPV = 0.239  
F-pseudosigma = 0.023  
N = 87  
Hu = 0.251  
Hi = 0.220

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
3	1	1.76			0.280			
7	4	-0.39			0.230			
8	4	0.04		0.240				
10	2	1.33				0.270		
11	3	-0.81						0.220
12	4	0.47				0.250		
13	0	-3.90		0.148				
15	3	0.60						0.253
16	0	20.02	0.707					
18	4	0.43				0.249		
21	0	2.18					0.290	
23	3	-0.51				0.227		
25	2	-1.24		0.210				
28	0	-9.81		0.010				
32	1	-1.67		0.200				
36	3	-0.86				0.219		
39	4	0.00						0.239
46	3	-0.69				0.223		
48	0	-2.10					0.190	
53	2	-1.24				0.210		
55	4	0.39				0.248		
56	1	-1.67			0.200			
57	0	2.91				0.307		
59	4	0.47				0.250		
60	2	1.28				0.269		
61	4	0.04	0.240					
64	4	-0.39				0.230		
68	0	-4.67			0.130			
69	3	-0.81				0.220		
70	0	-3.81				0.150		
72	0	2.61				0.300		
75	0	-4.97				0.123		
81	4	0.04			0.240			
83	3	-0.81				0.220		
84	4	0.00				0.239		
85	4	0.47				0.250		
86	2	-1.20				0.211		
87	4	0.04			0.240			
88	0	36.87				1.100		
89	4	0.04				0.240		
90	4	0.13					0.242	
91	3	-0.81					0.220	
96	3	-0.77					0.221	
97	4	0.21				0.244		
100	0	3.04				0.310		
102	4	0.47				0.250		
104	2	1.28				0.269		
105	3	0.90			0.260			
107	3	0.64				0.254		
111	0	-3.08		0.167				

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
113	3	-0.77				0.221		
114	2	1.33				0.270		
118	4	0.04						0.240
119	4	0.04		0.240				
120	3	-0.81				0.220		
121	4	-0.13				0.236		
122	3	-0.81				0.220		
126	4	-0.39				0.230		
128	2	1.03		0.263				
129	3	0.51		0.251				
134	4	0.04				0.240		
138	4	-0.26						0.233
140	2	-1.37			0.207			
141	3	-0.73					0.222	
142	0	3.25			0.315			
143	3	0.60				0.253		
145	1	-1.67				0.200		
146	2	-1.24				0.210		
158	4	0.04					0.240	
180	3	-0.69				0.223		
190	3	0.51			0.251			
193	0	3.55		0.322				
197	4	-0.09			0.237			
203	4	0.39			0.248			
204	2	-1.37				0.207		
211	2	-1.24			0.210			
212	4	0.04			0.240			
217	4	0.04						0.240
221	0	2.40				0.295		
224	0	21.80						0.748
226	4	-0.13				0.236		
231	2	-1.24			0.210			
234	1	-1.63		0.201				
237	2	-1.37		0.207				
240	0	35.16		1.060				
241	3	-0.60				0.225		
247	0	-6.64		0.084				

**Table 13. -Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)—Continued**  
**total P as P (total Phosphorus as phosphorus) mg/L**



0. Other					
4. ICP					
20. Titrate: colorimetric					
N =	1	4	1	12	63
Minimum =	0.230	0.235	0.228	0.163	0.113
Maximum =		0.870		0.260	0.719
Median =		0.254		0.220	0.220
F-pseudosigma =				0.030	0.013

MPV = 0.223  
F-pseudosigma = 0.013  
N = 81  
Hu = 0.231  
Hl = 0.214

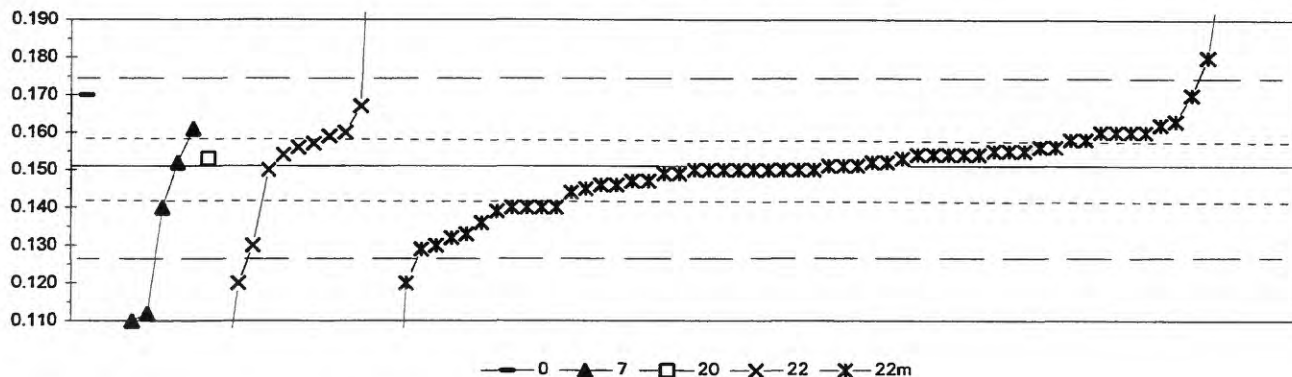
Lab	Rating	Z-value	0	4	20	22	22m
3	0	2.54				0.255	
5	4	-0.40					0.218
7	0	2.14				0.250	
8	3	0.56					0.230
10	0	-5.00					0.160
11	2	1.35					0.240
12	0	-4.21					0.170
13	0	-4.36					0.168
15	4	0.08				0.224	
16	4	0.40			0.228		
18	4	0.16					0.225
21	4	0.32					0.227
22	1	1.51					0.242
23	4	0.40					0.228
25	0	3.73		0.270			
28	0	51.34		0.870			
36	3	0.56					0.230
38	3	0.87					0.234
39	4	0.16					0.225
42	4	0.00					0.223
46	4	0.08					0.224
48	3	0.56					0.230
55	4	0.00					0.223
56	2	-1.03				0.210	
57	0	-3.41					0.180
59	1	-1.83					0.200
61	3	0.56	0.230				
64	4	-0.24					0.220
68	1	1.59				0.243	
70	3	0.79					0.233
72	2	1.35					0.240
81	1	-1.75				0.201	
83	3	0.95		0.235			
85	4	-0.24					0.220
86	2	1.19		0.238			
87	4	-0.48				0.217	
89	4	-0.24					0.220
90	1	-1.98					0.198
91	4	-0.24					0.220
96	1	-1.67					0.202
97	0	-8.73					0.113
100	NR						< 0.5
102	4	-0.40					0.218
104	4	0.40					0.228
105	0	2.94				0.260	
107	4	-0.48					0.217
111	3	0.56					0.230
113	3	-0.56					0.216
114	3	0.56					0.230
118	3	0.56					0.230

Lab	Rating	Z-value	0	4	20	22	22m
119	4	-0.24					0.220
120	1	-1.83					0.200
121	2	1.03					0.236
122	2	-1.03					0.210
128	2	-1.19					0.208
129	3	-0.95					0.211
134	0	-3.41					0.180
138	4	-0.40					0.218
140	0	-4.21				0.170	
141	4	-0.48					0.217
142	4	-0.32					0.219
143	4	-0.40					0.218
145	4	-0.24					0.220
149	4	0.00					0.223
158	3	0.63					0.231
180	3	-0.71					0.214
183	1	-1.51					0.204
185	3	0.95					0.235
190	0	-4.76				0.163	
193	3	0.56					0.230
203	4	-0.16					0.221
204	4	0.08					0.224
211	4	-0.24				0.220	
212	0	2.14					0.250
213	4	-0.24					0.220
217	0	-6.59					0.140
221	0	-2.78					0.188
224	0	39.36					0.719
226	3	0.95					0.235
234	1	1.51					0.242
240	4	-0.24				0.220	
241	3	0.71					0.232
247	0	-9.49				< 0.01	

**Table 13.** -Statistical summary of reported data for standard reference water sample N-47 (nutrient constituents)—Continued

**PO<sub>4</sub> as P (orthophosphate as phosphorus)**

mg/L



0. Other					
7. Ion chromatography					
20. Titrate: colorimetric					
N =	1	7	1	11	60
Minimum =	0.170	0.045	0.153	0.090	0.050
Maximum =		0.161		0.270	0.540
Median =		0.112		0.156	0.151
F-pseudosigma =		0.045		0.014	0.008

Lab	Rating	Z-value	0	7	20	22	22m
3	3	0.51				0.157	
5	4	0.25					0.154
8	1	1.60					0.170
10	0	6.15					0.224
11	4	-0.08					0.150
12	1	-1.77					0.130
13	0	-8.94	0.045				
15	4	0.25			0.154		
16	4	0.17		0.153			
18	4	0.25				0.154	
21	4	0.25				0.154	
23	3	0.93				0.162	
25	0	-8.52				0.050	
32	0	-3.29	0.112				
33	0	-3.46	0.110				
36	1	-1.60				0.132	
38	4	-0.34				0.147	
39	4	0.00				0.151	
42	4	0.42				0.156	
46	4	0.34				0.155	
48	4	-0.08				0.150	
53	2	1.01				0.163	
55	2	-1.26				0.136	
56	0	-5.14			0.090		
57	0	2.45				0.180	
59	3	0.76				0.160	
61	1	1.60	0.170				
64	3	0.76				0.160	
70	4	-0.34				0.147	
72	4	-0.08				0.150	
81	4	0.42			0.156		
83	0	24.37				0.440	
85	3	0.76				0.160	
87	2	1.35			0.167		
88	0	23.86				0.434	
89	4	-0.08				0.150	
90	4	0.00				0.151	
96	1	-1.85				0.129	
97	3	-0.59				0.144	
100	NR					< 0.5	
102	4	-0.17				0.149	
104	4	0.25				0.154	
105	3	0.76			0.160		
107	4	0.08				0.152	
111	4	-0.42				0.146	
113	3	-0.51				0.145	
118	0	-2.61				0.120	
119	3	-0.93				0.140	
120	3	-0.93				0.140	
121	4	0.42				0.156	

MPV = 0.151  
F-pseudosigma = 0.012  
N = 80  
Hu = 0.158  
HI = 0.142

Lab	Rating	Z-value	0	7	20	22	22m
122	3	-0.93					0.140
128	3	0.84		0.161			
129	2	-1.01					0.139
133	4	-0.08					0.150
134	4	-0.08					0.150
138	4	0.08					0.152
140	0	-2.61				0.120	
141	4	-0.08					0.150
142	3	0.76					0.160
143	4	-0.42					0.146
145	4	0.34					0.155
146	4	-0.17					0.149
158	1	-1.52					0.133
180	4	0.34					0.155
183	4	0.00					0.151
190	3	0.67				0.159	
191	0	-7.67		0.060			
196	3	-0.93		0.140			
203	4	0.17					0.153
204	4	0.25					0.154
211	0	10.03				0.270	
212	0	4.97					0.210
213	4	-0.08					0.150
217	4	-0.08					0.150
221	3	-0.93					0.140
224	0	32.80					0.540
231	1	-1.77				0.130	
234	3	0.59					0.158
240	4	-0.08				0.150	
241	3	0.59					0.158
247	4	0.08		0.152			

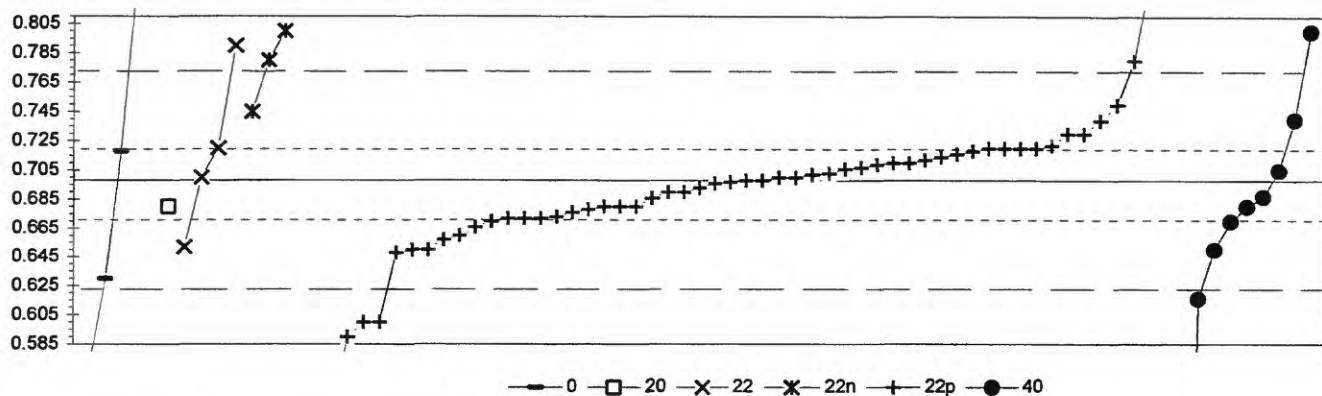
**Table 14.** -Statistical summary of reported data for standard reference water sample N-48 (nutrient constituents)

Definition of analytical methods, abbreviations, and symbols		
<u>Analytical methods</u>		
0. Other/Not reported		
4. ICP	=	inductively coupled plasma
5. DCP	=	direct coupled plasma
7. IC	=	ion chromatography
20. Titrate: color	=	titration: colorimetric (color reagent specified)
22. Color:	=	colorimetric [color reagent specified]
40. Ion electrode	=	ion selective electrode
<u>Abbreviations and symbols</u>		
	N	= number of samples
	MPV	= most probable value
	F-pseudosigma	= nonparametric statistic deviation
	Hu	= upper hinge value
	Hi	= lower hinge value
	mg/L	= milligrams per liter
	Lab	= laboratory code number
	NR	= not rated, less than value reported
	<	= less than
<u>Constituent</u>		<u>page</u>
NH <sub>3</sub> as N	Ammonia as nitrogen	87
NH <sub>3</sub> +Org N as N	Ammonia plus organic nitrogen	88
NO <sub>3</sub> +NO <sub>2</sub> as N	Nitrate plus nitrite as nitrogen	89
Total P as P	Total Phosphorus as phosphorus	90
PO <sub>4</sub> as P	orthophosphate as phosphorus	91



Table 14. -Statistical summary of reported data for standard reference water sample N-48 (nutrient constituents)—Continued

NH<sub>3</sub> as N (Ammonia as nitrogen) mg/L



0. Other	22n. Color: Nesslerization
20. Titrate: colorimetric	22p. Color: phenate
22. Colorimetric	40. Ion selective electrode
N =	4 1 4 3 55 9
Minimum =	0.570 0.680 0.652 0.745 0.037 0.060
Maximum =	0.836 0.790 0.800 0.930 0.800
Median =	0.674 0.710 0.780 0.697 0.680
F-pseudosigma =	0.032 0.041

MPV = 0.698  
F-pseudosigma = 0.037  
N = 76  
Hu = 0.720  
Hi = 0.670

Lab	Rating	Z-value	0	20	22	22n	22p	40
3	4	0.45					0.714	
7	3	0.61					0.720	
8	NR			< 1				
10	4	-0.28						0.687
11	4	0.07					0.700	
12	0	-2.63					0.600	
13	3	-0.58					0.676	
15	2	-1.23			0.652			
16	0	-3.44	0.570					
18	2	1.12					0.739	
23	2	-1.28					0.650	
32	0	3.74	0.836					
33	3	0.61					0.720	
36	2	1.15						0.740
38	4	-0.04					0.696	
39	0	-7.35					0.425	
46	3	-0.53					0.678	
48	0	-2.90					0.590	
53	0	2.77				0.800		
55	3	0.55					0.718	
57	0	-17.20						0.060
58	3	-0.74						0.670
59	0	-4.52					0.530	
60	4	-0.31					0.686	
61	3	0.55	0.718					
64	4	0.34					0.710	
70	4	-0.12					0.693	
72	3	0.61					0.720	
76	4	0.15					0.703	
80	0	2.23				0.780		
81	3	-0.69					0.672	
83	3	-0.74					0.670	
84	3	0.66					0.722	
85	4	0.34					0.710	
86	3	-0.85					0.666	
87	0	-2.63					0.600	
88	0	3.87					0.841	
89	3	0.88					0.730	
90	4	0.01					0.698	
91	4	-0.47					0.680	
93	4	0.01					0.698	
96	4	-0.20					0.690	
97	4	0.31					0.709	
100	4	-0.47		0.680				
102	2	1.42					0.750	
104	3	-0.69					0.672	
105	4	0.07			0.700			
107	4	0.23					0.706	
111	2	-1.28					0.650	
114	2	-1.28						0.650

Lab	Rating	Z-value	0	20	22	22n	22p	40
118	0	2.23						0.780
119	4	-0.47						0.680
120	4	0.26						0.707
122	2	-1.01						0.660
128	4	-0.47						0.680
129	2	1.28				0.745		
134	3	0.61					0.720	
138	3	-0.66					0.673	
140	4	-0.20					0.690	
141	2	-1.09					0.657	
142	3	-0.69					0.672	
143	4	0.07					0.700	
145	3	0.88					0.730	
146	4	0.50					0.716	
158	4	0.39					0.712	
180	4	0.12					0.702	
190	0	2.50			0.790			
203	2	-1.34					0.648	
204	4	-0.01					0.697	
211	4	-0.47					0.680	
212	3	0.61			0.720			
221	1	-1.82	0.630					
224	0	-17.82					0.037	
231	0	6.27					0.930	
234	4	0.20						0.705
240	0	2.77						0.800
241	0	-2.20						0.616

mg/L



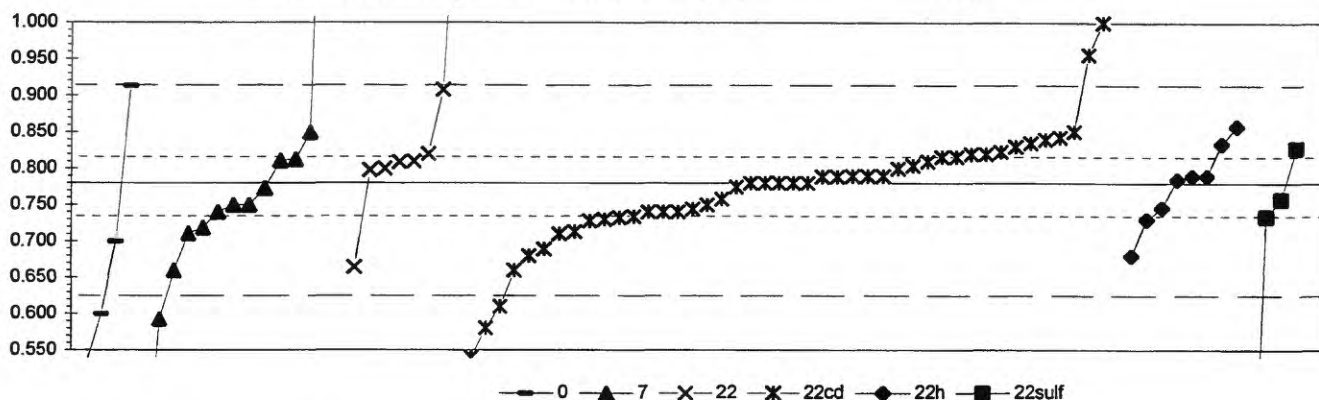
MPV =	1.29
F-pseudosigma =	0.20
N =	58
Hu =	1.44
HI =	1.17

Lab	Rating	Z-value	0	20	22	22n	22p	40
185	0	3.17			1.92			
190	3	0.81			1.45			
203	2	-1.18			1.05			
211	4	-0.09					1.27	
212	4	0.06			1.30			
221	1	1.56	1.60					
224	0	-2.63					0.76	
241	3	0.86						1.46

Table 14. -Statistical summary of reported data for standard reference water sample N-48 (nutrient constituents)--Continued

NO<sub>3</sub> + NO<sub>2</sub> as N (Nitrate + nitrite as nitrogen)

mg/L



0. Other			22cd. Color: Cd diazotization					
7. Ion chromatography			22h. Color: hydrazine diazotization					
22. Colorimetric			22sulf. Color: sulfanilamide					
	N =	4	14	8	45	8	4	
	Minimum =	0.530	0.360	0.665	0.540	0.680	0.236	
	Maximum =	0.913	5.260	1.287	1.480	0.858	0.828	
	Median =	0.650	0.750	0.810	0.780	0.788	0.746	
	F-pseudosigma =		0.076	0.048	0.061	0.055		

MPV = 0.780  
F-pseudosigma = 0.065  
N = 83  
Hu = 0.818  
HI = 0.730

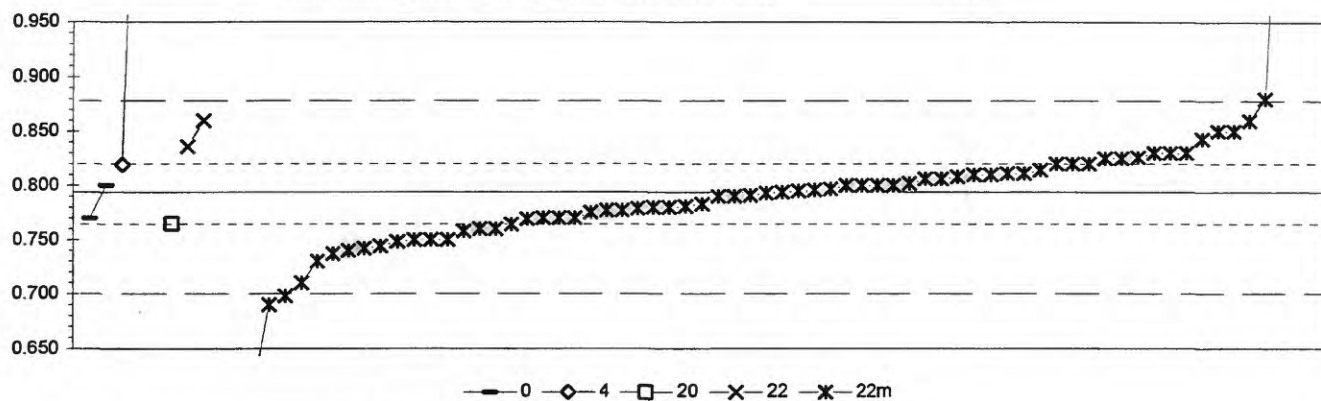
Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
3	3	0.84				0.835		
7	3	-0.61				0.740		
8	0	-6.44	0.360					
10	4	0.15				0.790		
11	4	0.00				0.780		
12	4	0.00				0.780		
13	1	-1.84	0.660					
15	4	0.44			0.809			
16	0	7.77			1.287			
18	4	0.14				0.789		
23	4	0.00				0.780		
28	0	68.68		5.260				
30	2	-1.06		0.711				
32	0	-2.87		0.593				
36	4	-0.34				0.758		
38	3	0.97				0.843		
39	3	-0.71					0.734	
40	4	0.15					0.790	
42	4	-0.46		0.750				
46	4	-0.08				0.775		
48	1	-1.53					0.680	
53	0	-2.61				0.610		
55	4	0.14				0.789		
56	2	-1.07				0.710		
57	0	-3.07				0.580		
58	0	-2.76	0.600					
59	3	0.61				0.820		
60	4	0.31				0.800		
61	2	-1.23	0.700					
64	4	0.15				0.790		
69	4	0.00				0.780		
70	0	-3.68				0.540		
72	3	0.61				0.820		
75	3	-0.55				0.744		
80	0	-3.83	0.530					
81	3	0.66				0.823		
83	4	-0.46				0.750		
84	4	0.37				0.804		
85	3	-0.61				0.740		
86	3	-0.80				0.728		
87	3	0.92				0.840		
88	0	10.73				1.480		
89	4	0.00				0.780		
90	3	0.83					0.834	
91	3	-0.77					0.730	
96	4	0.08					0.785	
97	3	0.55				0.816		
100	0	2.70				0.956		
102	3	-0.77				0.730		
104	2	1.09				0.851		

Lab	Rating	Z-value	0	7	22	22cd	22h	22sulf
105	4	0.46			0.810			
107	3	0.55				0.816		
111	3	-0.94	0.719					
113	3	-0.71				0.734		
114	0	3.37				1.000		
118	4	0.15					0.790	
119	2	1.07	0.850					
122	3	-0.61				0.740		
128	4	-0.11	0.773					
129	3	0.51	0.813					
134	4	0.15				0.790		
138	4	-0.34					0.758	
140	2	-1.39				0.689		
141	3	-0.52					0.746	
142	1	1.96			0.908			
143	4	0.46				0.810		
145	1	-1.84				0.660		
146	2	-1.03				0.713		
158	2	1.20					0.858	
180	3	-0.74				0.732		
190	4	0.28			0.798			
191	4	0.31			0.800			
193	4	0.48	0.811					
203	3	0.74					0.828	
208	4	-0.46	0.750					
211	3	0.77				0.830		
212	3	0.61			0.820			
221	1	2.04	0.913					
224	0	-8.34					0.236	
231	1	-1.53				0.680		
234	3	-0.61	0.740					
240	0	11.10	1.504					
241	1	-1.76			0.665			

**Table 14.** -Statistical summary of reported data for standard reference water sample N-48 (nutrient constituents)—Continued

total P as P (total Phosphorus as phosphorus)

mg/L



0. Other	22. Colorimetric
4. ICP	22m. Color: phosphomolybdate
20. Titrate: colorimetric	
N =	2 3 1 2 67
Minimum =	0.770 0.819 0.765 0.836 0.206
Maximum =	0.800 2.846 0.860 1.200
Median =	0.791
F-pseudosigma =	0.038

MPV = 0.794  
F-pseudosigma = 0.041  
N = 75  
Hu = 0.820  
HI = 0.765

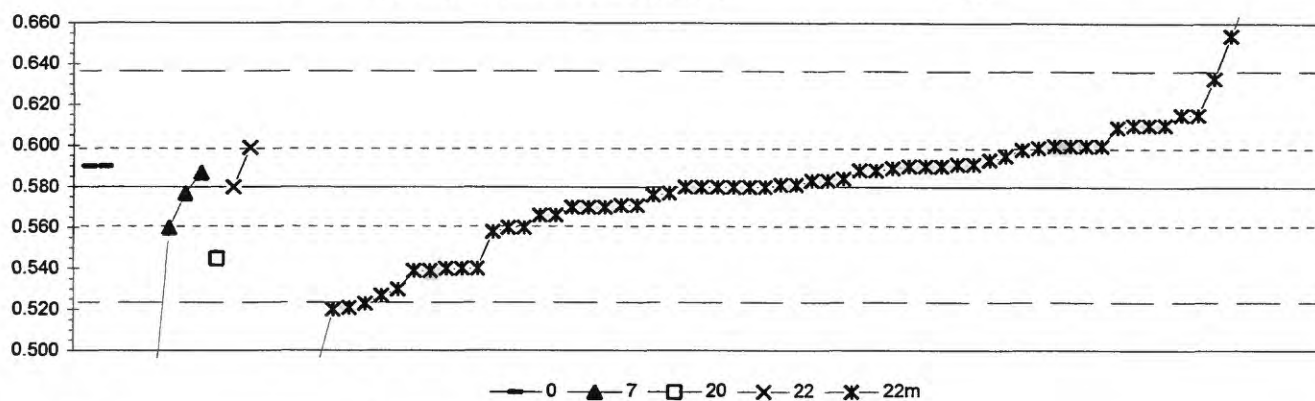
Lab	Rating	Z-value	0	4	20	22	22m
3	4	0.05					0.796
5	3	0.78					0.826
7	1	1.62					0.860
8	3	0.64					0.820
10	0	-4.51					0.610
11	3	0.88					0.830
12	1	-1.57					0.730
13	4	0.29					0.806
15	4	0.20					0.802
16	3	-0.71			0.765		
18	4	-0.02					0.793
22	2	1.20					0.843
23	3	0.88					0.830
28	0	13.29		1.336			
36	0	9.96					1.200
38	4	0.29					0.806
39	0	-5.40					0.574
42	4	0.15					0.800
46	3	-0.88					0.758
48	3	0.88					0.830
55	4	0.49					0.814
56	2	-1.08					0.750
57	2	1.37					0.850
58	2	1.37					0.850
59	4	0.15					0.800
61	3	-0.59	0.770				
64	4	-0.34					0.780
70	4	0.42					0.811
72	3	-0.59					0.770
81	4	0.00					0.794
83	0	50.33		2.846			
85	4	0.39					0.810
86	3	0.61		0.819			
87	3	-0.83					0.760
89	3	-0.59					0.770
90	3	-0.59					0.770
91	4	-0.34					0.780
96	4	-0.32					0.781
97	2	-1.23					0.744
100	2	-1.32					0.740
102	4	0.02					0.795
104	4	0.34					0.808
105	1	1.62				0.860	
107	3	0.76					0.825
111	3	0.64					0.820
113	4	-0.47					0.775
114	4	0.39					0.810
118	4	-0.10					0.790
119	4	0.15					0.800
122	2	-1.08					0.750

Lab	Rating	Z-value	0	4	20	22	22m
128	3	0.64					0.820
129	2	-1.13					0.748
134	4	-0.10					0.790
138	4	-0.37					0.779
140	0	2.11					0.880
141	4	-0.42					0.777
142	4	-0.42					0.777
143	3	-0.74					0.764
145	4	0.15					0.800
158	4	0.07					0.797
180	4	-0.07					0.791
183	2	-1.40					0.737
185	4	-0.27					0.783
190	0	-2.35					0.698
193	3	0.76					0.825
203	3	-0.61					0.769
204	2	-1.28					0.742
211	0	-2.55					0.690
212	0	-2.06					0.710
213	3	-0.83					0.760
221	4	0.15	0.800				
224	0	-14.42					0.206
234	4	0.42					0.811
240	2	-1.08					0.750
241	2	1.03				0.836	

**Table 14.** Statistical summary of reported data for standard reference water sample N-48 (nutrient constituents)—Continued

PO<sub>4</sub> as P (orthophosphate as phosphorus)

mg/L



0. Other	22. Colorimetric
7. Ion chromatography	22m. Color:phosphomolybdate
20. Titrate: colorimetric	
N =	2 6 1 2 66
Minimum =	0.590 0.414 0.545 0.580 0.050
Maximum =	0.587 0.587 0.599 1.720
Median =	0.515 0.581
F-pseudosigma =	0.030

MPV = 0.580  
F-pseudosigma = 0.028  
N = 77  
Hu = 0.598  
HI = 0.560

Lab	Rating	Z-value	0	7	20	22	22m
3	4	-0.32					0.571
5	4	0.11					0.583
8	2	1.07					0.610
10	0	8.31					0.814
11	3	-0.71					0.560
12	1	-1.78					0.530
13	0	-5.72	0.419				
15	4	0.28					0.588
16	2	-1.24			0.545		
18	4	0.00					0.580
23	4	0.00					0.580
30	4	0.25		0.587			
32	4	-0.11		0.577			
33	3	-0.71		0.560			
36	4	0.04					0.581
38	4	-0.14					0.576
39	1	-2.02					0.523
40	3	-0.71					0.560
42	3	0.67					0.599
46	2	1.07					0.610
48	4	-0.36					0.570
53	4	0.46					0.593
55	2	-1.46					0.539
56	0	-3.20					0.490
57	0	-9.59					0.310
59	4	0.00					0.580
61	4	0.36	0.590				
64	3	0.71					0.600
70	4	-0.50					0.566
72	3	0.71					0.600
80	4	0.36					0.590
81	3	0.53					0.595
83	0	40.47					1.720
85	3	0.71					0.600
87	4	0.39					0.591
88	0	7.81					0.800
89	4	0.00					0.580
90	4	0.14					0.584
96	2	-1.46					0.539
97	2	1.03					0.609
100	2	-1.42					0.540
102	4	0.11					0.583
104	0	3.37					0.675
105	4	0.00				0.580	
107	4	0.39					0.591
111	3	-0.78					0.558
113	4	-0.50					0.566
118	2	-1.42					0.540
119	4	-0.36					0.570
122	2	-1.42					0.540

Lab	Rating	Z-value	0	7	20	22	22m
128	0	-5.89	0.414				
129	1	-1.88					0.527
133	4	-0.36					0.570
134	4	0.00					0.580
138	4	0.32					0.589
140	0	-2.13					0.520
141	1	1.88					0.633
142	2	1.24					0.615
143	4	0.04					0.581
145	4	0.36					0.590
146	4	0.36					0.590
158	0	-2.09					0.521
180	4	0.28					0.588
183	4	-0.32					0.571
190	0	2.63					0.654
191	0	-18.82					0.050
203	4	-0.11					0.577
208	0	-3.91	0.470				
211	3	0.71					0.600
212	2	1.07					0.610
213	4	0.00					0.580
221	4	0.36	0.590				
224	0	-15.27					0.150
231	0	7.81					0.800
234	3	0.64					0.598
240	2	1.24					0.615
241	3	0.67				0.599	



**Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)**

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**Definition of analytical methods, abbreviations, and symbols**

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Analytical methods

0 Other/Not reported	=	
1 AA: direct, air	=	atomic absorption: direct,air
2 AA: direct, N <sub>2</sub> O	=	atomic absorption: direct,nitrous oxide
3 AA: graphite furnace	=	atomic absorption: graphite furnace
4 ICP	=	inductively coupled plasma
5 DCP	=	direct current plasma
6 ICP/MS	=	mass spectrometry/inductively coupled plasma
7 IC	=	ion chromatography
12 Flame emission	=	flame emission
20 Titrate: color	=	titration: colorimetric [color reagent specified]
21 Titrate: electro	=	titration: electrometric
22 Color:	=	colorimetric [color reagent specified]
40 Ion electrode	=	ion selective electrode
41 Electro	=	electrometric: [type meter specified]
50 Gravimetric	=	gravimetric: [precipitate specified]
51 Turbidimetric	=	turbidimetric: [precipitate specified]

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Abbreviations and symbols

N	=	number of samples
MPV	=	most probable value
F-pseudosigma	=	nonparametric statistic deviation
Hu	=	upper hinge value
Hi	=	lower hinge value
mg/L	=	milligrams per liter
μS/cm	=	microsiemens per centimeter at 25° C
Lab	=	laboratory code number
NR	=	not rated, less than value reported
<	=	less than

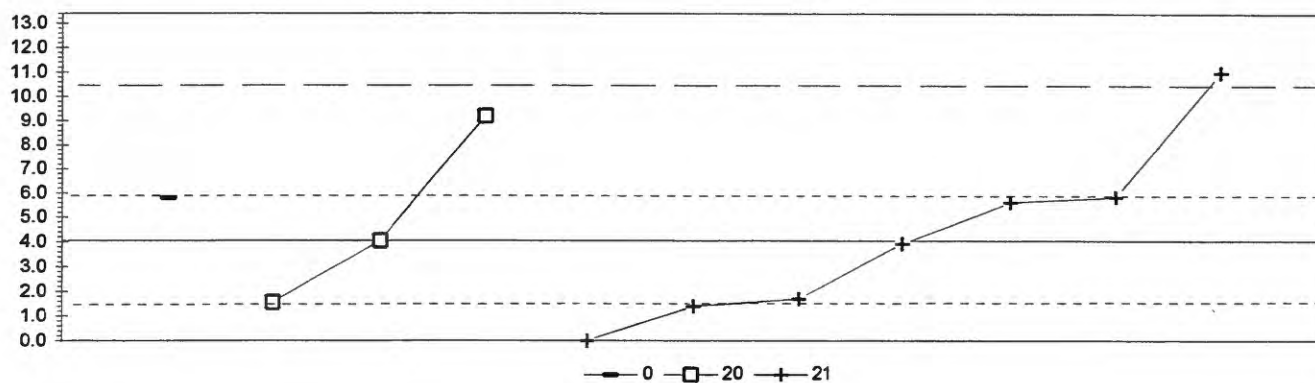
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<u>Constituent</u>	<u>page</u>
Acid      Acidity as CaCO <sub>3</sub>	93
Ca        Calcium	94
Cl        Chloride	95
F         Fluoride	96
K         Potassium	97
Mg        Magnesium	98
Na        Sodium	99
pH	100
PO <sub>4</sub> as P   Orthophosphate as Phosphorus	101
SO <sub>4</sub> Sulfate	102
Sp Cond   Specific Conductance	103

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**Table 15.** Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

Acidity (as  $\text{CaCO}_3$ ) mg/L



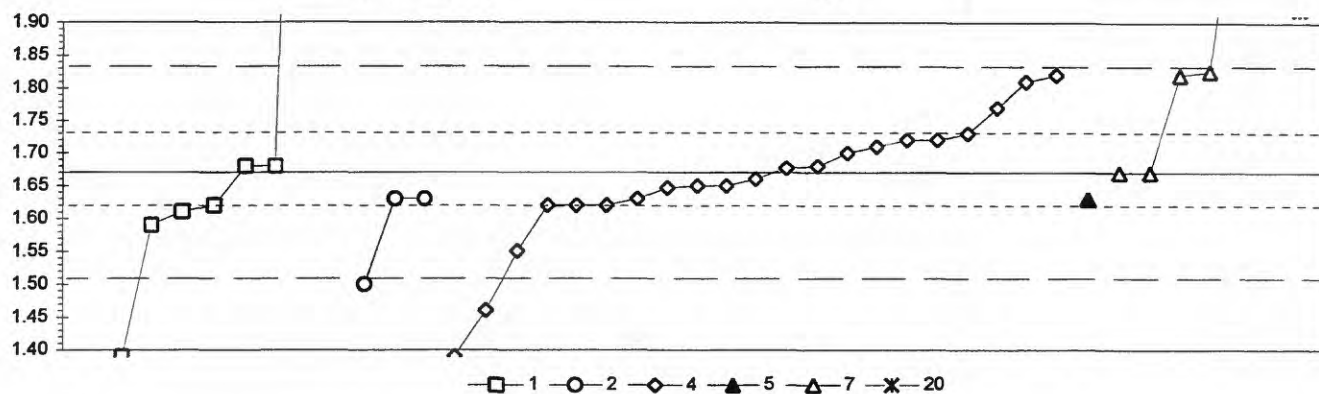
0. Other				
20. Titrate: colorimetric				
21. Titrate: electrometric				
N =	1	3	7	
Minimum =	5.8	1.6	0.0	
Maximum =		9.2	11.0	
Median =			3.9	
F-pseudostandard deviation =			3.1	

MPV = 4.1  
F-pseudostandard deviation = 3.1  
N = 11  
Hu = 5.8  
Hl = 1.6

Lab	Rating	Z-value	0	20	21
3	3	-0.85			1.4
25	NR				< 8
36	0	2.24			11.0
38	3	0.51			5.6
81	3	-0.80		1.6	
89	4	0.00		4.1	
105	1	1.66		9.2	
141	NR				< 1
146	4	-0.04			3.9
196	3	0.56	5.8		
224	3	0.57			5.8
244	3	-0.76			1.7
247	NR				0.0

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

Ca (Calcium) mg/L



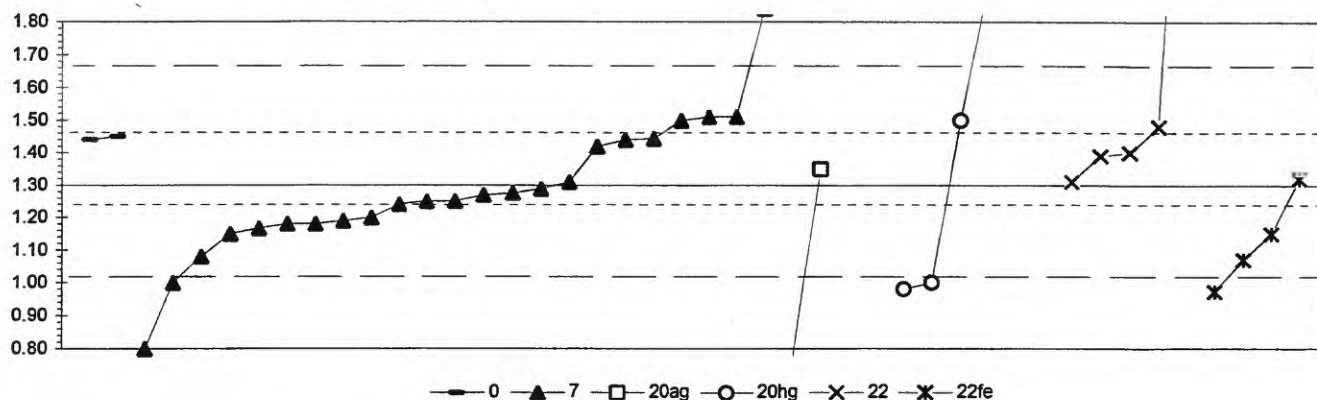
1. AA: direct air	5. DCP
2. AA: direct nitrous oxide	7. Ion chromatography
4. ICP	20. Titrate: colorimetric
N =	9 3 21 1 6 1
Minimum =	1.25 1.50 1.39 1.63 1.67 1.92
Maximum =	3.28 1.63 1.82 2.26
Median =	1.62 1.66 1.82
F-pseudostigma =	0.07 0.07

MPV = 1.67  
F-pseudostigma = 0.08  
N = 41  
Hu = 1.73  
HI = 1.62

Lab	Rating	Z-value	1	2	4	5	7	20
2	1	1.91					1.83	
3	1	1.84			1.82			
8	0	-2.58			1.46			
23	0	3.07						1.92
25	4	0.12			1.68			
26	0	7.24					2.26	
28	2	1.23			1.77			
33	4	-0.49				1.63		
36	0	-2.08		1.50				
38	4	-0.49		1.63				
39	3	0.61			1.72			
46	4	-0.12			1.66			
48	3	0.61			1.72			
58	0	-3.43	1.39					
64	4	0.12	1.68					
81	3	-0.61			1.62			
89	3	-0.61	1.62					
93	2	-1.47			1.55			
101	0	19.74	3.28					
102	0	-3.43			1.39			
105	3	0.74			1.73			
107	0	-5.15	1.25					
110	4	0.12	1.68					
111	4	-0.49		1.63				
113	1	1.72			1.81			
116	3	-0.61			1.62			
134	4	0.09			1.68			
138	4	-0.25			1.65			
140	3	-0.72	1.61					
141	4	-0.49			1.63			
145	3	-0.61			1.62			
146	4	-0.25			1.65			
180	4	0.37			1.70			
190	1	1.84					1.82	
196	3	-0.98	1.59					
224	4	-0.28			1.65			
228	0	6.21					2.18	
237	4	0.00					1.67	
238	4	0.00					1.67	
241	0	17.54	3.10					
247	4	0.49			1.71			

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

Cl (Chloride) mg/L



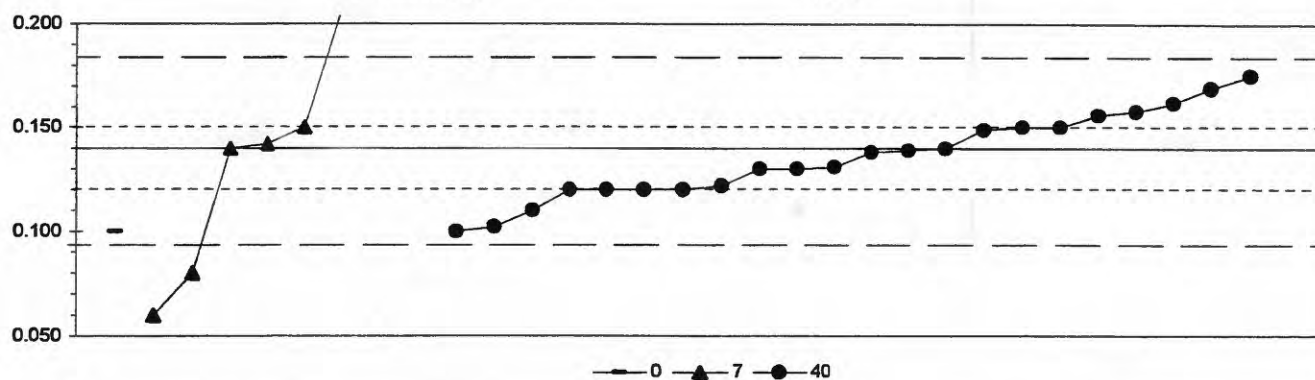
0. Other							
7. Ion chromatography							
20ag: Titrate: silver							
	N =	2	23	2	6	5	4
	Minimum =	1.44	0.80	0.75	0.98	1.31	0.97
	Maximum =	1.45	1.84	1.35	2.00	2.98	1.32
	Median =		1.25		1.72	1.40	1.11
	F-pseudosigma =		0.19				

MPV = 1.30  
F-pseudosigma = 0.17  
N = 42  
Hu = 1.40  
HI = 1.17

Lab	Rating	Z-value	0	7	20ag	20hg	22	22fe
2	4	-0.29		1.25				
3	3	0.53					1.39	
8	3	0.71		1.42				
23	3	0.83	1.44					
25	2	1.18		1.50				
26	3	-0.65		1.19				
33	4	0.06		1.31				
36	0	3.73				1.93		
39	3	0.59					1.40	
48	1	-1.78				1.00		
58	0	4.14				2.00		
59	3	0.89	1.45					
60	0	-3.25			0.75			
64	4	-0.06		1.29				
81	4	0.06					1.31	
89	2	1.18				1.50		
93	3	-0.71		1.18				
100	3	-0.59		1.20				
101	0	9.94					2.98	
102	1	-1.89				0.98		
105	1	-1.78		1.00				
107	NR				< 2.5			
110	4	-0.30		1.25				
111	3	-0.89		1.15				
113	0	3.20		1.84				
134	4	-0.14		1.28				
138	4	-0.18		1.27				
140	2	1.07					1.48	
141	3	-0.89						1.15
143	4	0.12						1.32
145	3	0.83		1.44				
146	1	-1.94						0.97
180	2	-1.36						1.07
190	3	-0.71		1.18				
196	0	-2.96		0.80				
197	4	-0.35		1.24				
203	NR				< 2			
204	4	0.30			1.35			
224	3	0.85		1.44				
228	3	-0.79		1.17				
237	2	1.24		1.51				
238	2	1.24		1.51				
241	0	4.14				2.00		
247	2	-1.30		1.08				

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

F (Fluoride) mg/L



0. Other			
7. Ion chromatography			
40. Ion selective electrode			
	N =	1	7
	Minimum =	0.100	0.060
	Maximum =	0.268	0.175
	Median =	0.142	0.135
	F-pseudosigma =	0.051	0.022

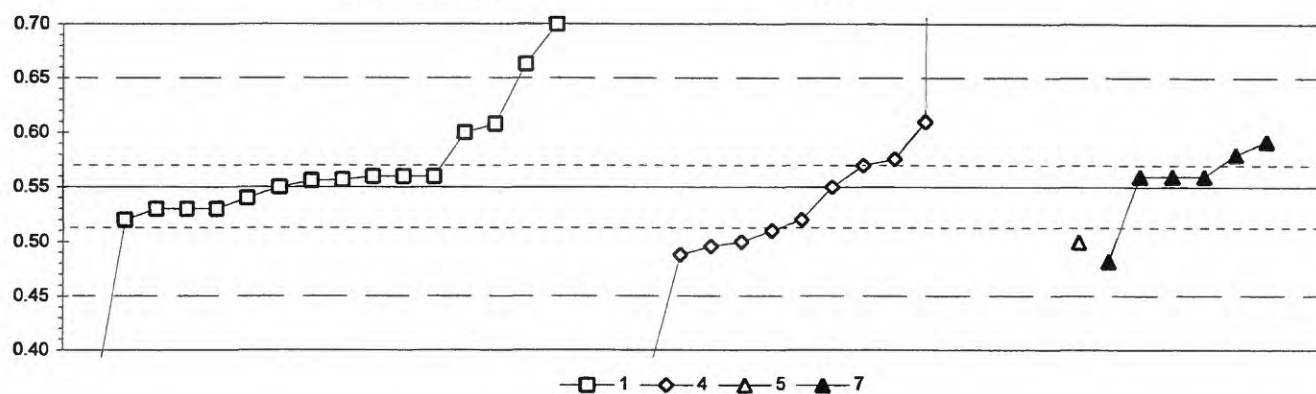
MPV = 0.139  
F-pseudosigma = 0.022  
N = 30  
Hu = 0.150  
Hi = 0.120

Lab	Rating	Z-value	0	7	40
3	3	-0.74			0.122
8	0	-3.53		0.060	
23	2	-1.28			0.110
25	1	-1.73			0.100
26	4	0.07		0.140	
36	3	-0.83			0.120
39	3	-0.83			0.120
46	2	1.37			0.169
58	3	-0.83			0.120
59	1	-1.73	0.100		
81	2	1.06			0.162
89	3	-0.83			0.120
93	4	0.07			0.140
100	1	1.64			0.175
102	0	3.13		0.208	
105	NR			< 0.2	
107	3	0.52			0.150
110	4	0.02			0.139
113	4	-0.34			0.131
134	4	-0.02			0.138
138	3	0.88			0.158
140	1	-1.64			0.102
141	3	0.79			0.156
145	3	0.52		0.150	
146	NR				< 0.2
180	4	-0.38			0.130
190	4	-0.38			0.130
196	3	0.52			0.150
197	4	0.16		0.142	
224	0	5.82		0.268	
241	4	0.47			0.149
247	0	-2.63		0.080	



Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)-Continued

K (Potassium) mg/L



1. AA: direct air	7. Ion chromatography				
4. ICP					
5. DCP					
	N =	16	13	1	6
	Minimum =	0.35	0.31	0.50	0.48
	Maximum =	0.70	7.00		0.59
	Median =	0.56	0.51		0.56
	F-pseudosigma =	0.04	0.06		

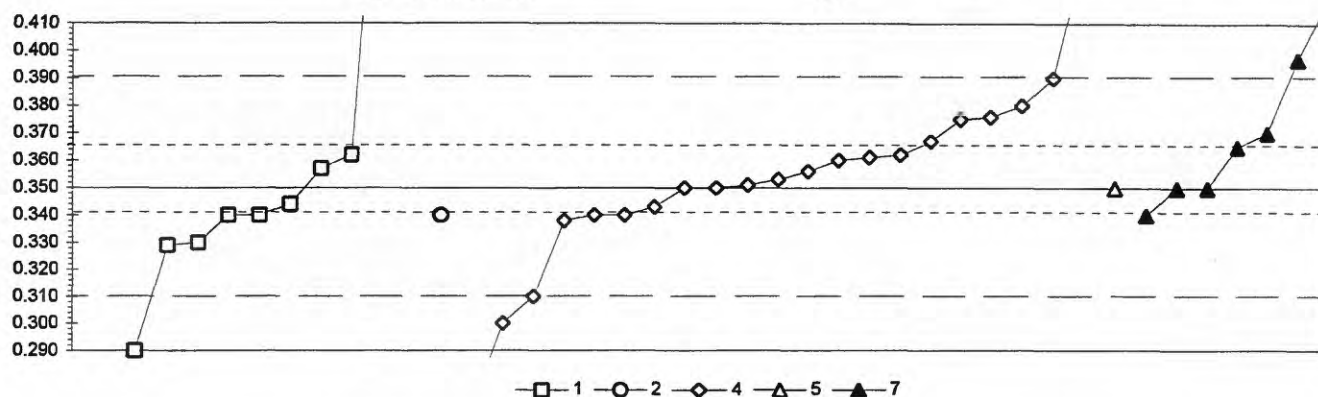
MPV = 0.55  
F-pseudosigma = 0.05  
N = 36  
Hu = 0.57  
HI = 0.51

Lab	Rating	Z-value	1	4	5	7
2	3	0.77				0.59
3	0	-4.03	0.35			
8	NR			< 0.5		
23	4	0.14	0.56			
25	NR			< 1.21		
26	4	0.14				0.56
28	2	-1.05		0.50		
33	2	-1.05			0.50	
36	0	2.18	0.66			
38	3	-0.65	0.52			
39	0	127.90		7.00		
48	4	-0.06		0.55		
58	4	-0.46	0.53			
64	4	-0.46	0.53			
81	2	-1.29			0.49	
89	4	-0.26	0.54			
101	4	0.14	0.56			
102	0	-4.03		0.35		
105	3	-0.65		0.52		
107	4	-0.46	0.53			
110	4	0.14	0.56			
111	4	-0.06	0.55			
113	0	-3.43			0.38	
134	2	1.09	0.61			
138	3	-0.85		0.51		
140	4	0.06	0.56			
141	4	0.34		0.57		
145	0	-4.82		0.31		
146	4	0.46		0.58		
180	NR			< 1.26		
190	3	0.54				0.58
196	3	0.93	0.60			
221	4	0.08	0.56			
224	2	-1.13		0.50		
228	2	-1.41				0.48
237	4	0.14				0.56
238	4	0.14				0.56
241	0	2.92	0.70			
247	2	1.13		0.61		

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)-Continued

Mg (Magnesium)

mg/L



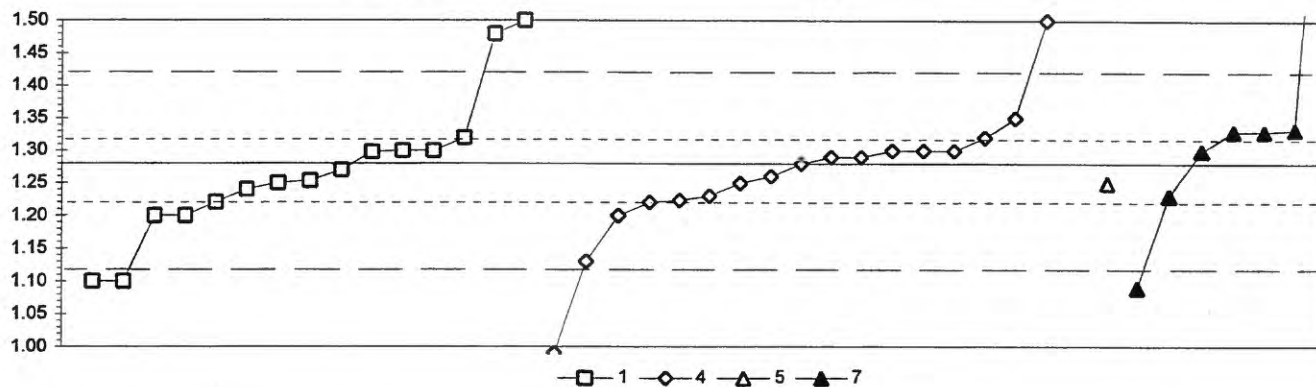
1. AA: direct air	5. DCP				
2. AA: direct nitrous oxide	7. Ion chromatography				
4. ICP					
N =	10	1	21	1	7
Minimum =	0.230	0.340	0.270	0.350	0.340
Maximum =	0.500		0.437		0.420
Median =	0.340		0.353		0.365
F-pseudostigma =	0.021		0.020		0.025

MPV = 0.350  
F-pseudostigma = 0.019  
N = 40  
Hu = 0.366  
HI = 0.340

Lab	Rating	Z-value	1	2	4	5	7
2	0	2.44					0.397
3	0	4.51			0.437		
8	0	-2.08			0.310		
23	NR		< 0.5				
25	4	0.16			0.353		
26	0	3.63					0.420
28	1	1.56			0.380		
33	4	0.00				0.350	
36	0	-6.23	0.230				
38	4	0.36	0.357				
39	2	1.30			0.375		
46	4	-0.36			0.343		
48	0	2.08			0.390		
64	3	-0.52					0.340
81	3	-0.62			0.338		
89	3	-0.52	0.340				
93	3	0.62			0.362		
101	3	-0.52	0.340				
102	0	-2.59			0.300		
105	4	0.31			0.356		
107	0	-3.11	0.290				
110	2	-1.04	0.330				
111	3	-0.52		0.340			
113	3	0.52			0.360		
116	3	-0.52			0.340		
134	4	0.05			0.351		
138	3	-0.52			0.340		
140	4	-0.31	0.344				
141	4	0.00			0.350		
145	0	-4.15			0.270		
146	3	0.57			0.361		
180	3	0.88			0.367		
190	2	1.04					0.370
196	3	0.62	0.362				
221	2	-1.09	0.329				
224	2	1.34			0.376		
228	3	0.78					0.365
237	4	0.00					0.350
238	4	0.00					0.350
241	0	7.78	0.500				
247	4	0.00			0.350		

**Table 15.** -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)-Continued

**Na (Sodium)** mg/L



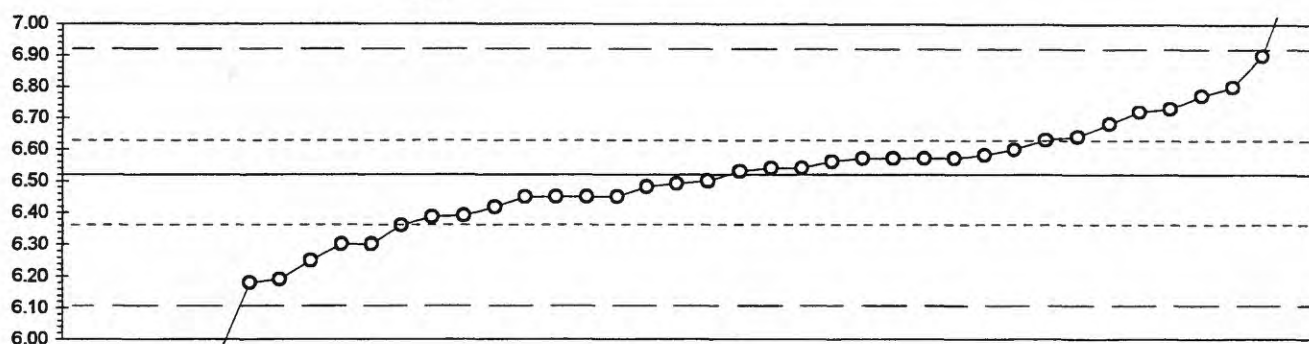
1. AA: direct air	7. Ion chromatography				
4. ICP					
5. DCP					
	N =	15	18	1	7
	Minimum =	1.10	0.99	1.25	1.09
	Maximum =	1.50	1.70		1.94
	Median =	1.25	1.29		1.33
	F-pseudosigma =	0.07	0.06		0.05

MPV = 1.28  
F-pseudosigma = 0.07  
N = 41  
Hu = 1.32  
HI = 1.22

Lab	Rating	Z-value	1	4	5	7
2	0	9.23				1.94
3	0	2.78	1.48			
8	3	-0.83		1.22		
23	4	-0.42	1.25			
25	4	0.14		1.29		
26	0	-2.64				1.09
28	2	-1.11		1.20		
33	4	-0.42			1.25	
36	0	-2.50	1.10			
38	3	-0.83	1.22			
39	4	0.28		1.30		
46	4	-0.28		1.26		
48	4	0.28		1.30		
58	4	0.28	1.30			
64	3	-0.70				1.23
81	4	0.14		1.29		
89	3	-0.56	1.24			
101	2	-1.11	1.20			
102	0	-4.03		0.99		
105	3	0.56		1.32		
107	2	-1.11	1.20			
110	4	-0.14	1.27			
111	4	0.28	1.30			
113	3	-0.70		1.23		
116	4	0.28		1.30		
134	4	0.25	1.30			
138	4	-0.42		1.25		
140	4	-0.38	1.25			
141	3	0.97		1.35		
145	0	-2.09		1.13		
146	0	3.06		1.50		
180	4	0.00		1.28		
190	4	0.28			1.30	
196	3	0.56	1.32			
221	0	-2.50	1.10			
224	3	-0.79		1.22		
228	3	0.74			1.33	
237	3	0.70			1.33	
238	3	0.70			1.33	
241	0	3.06	1.50			
247	0	5.84		1.70		

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

pH



—○— 41

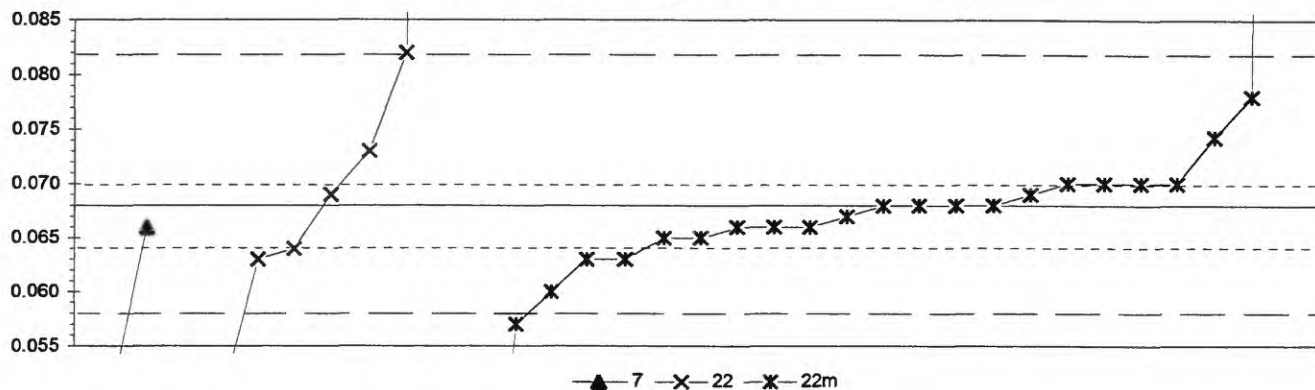
41. Direct reading

N = 42  
Minimum = 5.25  
Maximum = 8.00  
Median = 6.52  
F-pseudosigma = 0.20

MPV = 6.52  
F-pseudosigma = 0.20  
N = 42  
Hu = 6.63  
Hi = 6.36

Lab	Rating	Z-value	41
2	4	-0.48	6.42
3	0	-2.82	5.95
8	0	4.12	7.34
23	4	0.07	6.53
25	2	1.27	6.77
26	3	0.57	6.63
28	0	3.17	7.15
33	3	-0.77	6.36
36	4	-0.32	6.45
38	2	1.42	6.80
39	3	0.82	6.68
48	0	7.42	8.00
58	0	-3.47	5.82
59	4	-0.17	6.48
64	2	1.07	6.73
81	4	0.22	6.56
89	4	-0.32	6.45
93	1	1.92	6.90
100	2	1.02	6.72
101	0	-6.32	5.25
105	1	-1.67	6.18
107	4	-0.07	6.50
110	4	-0.12	6.49
111	4	0.27	6.57
113	4	0.27	6.57
134	4	0.27	6.57
138	3	-0.64	6.39
140	0	-3.17	5.88
141	4	0.12	6.54
143	2	-1.07	6.30
145	2	-1.07	6.30
146	3	-0.62	6.39
180	4	-0.32	6.45
190	4	-0.32	6.45
196	4	0.12	6.54
203	4	0.42	6.60
204	1	-1.62	6.19
224	4	0.27	6.57
228	2	-1.32	6.25
241	0	-5.12	5.49
244	3	0.62	6.64
247	4	0.32	6.58

**Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued**  
**PO<sub>4</sub> as P (orthophosphate as phosphorus) mg/L**



7. Ion chromatography				
22. Colorimetric				
22m. Color: phosphomolybdate				
N =	2	7	23	
Minimum =	0.050	0.050	0.021	
Maximum =	0.066	0.364	0.730	
Median =		0.069	0.068	
F-pseudosigma =		0.010	0.004	

MPV = 0.068  
F-pseudosigma = 0.005  
N = 32  
Hu = 0.070  
HI = 0.064

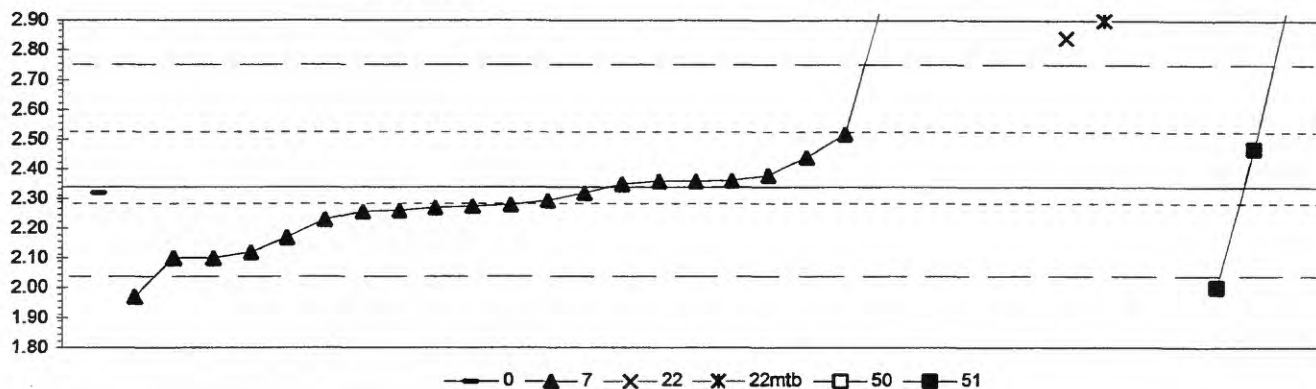
Lab	Rating	Z-value	7	22	22m
3	4	-0.31			0.066
8	1	-1.56			0.060
15	4	0.10			0.068
23	0	137.49			0.730
25	0	-9.65			0.021
33	0	-3.63	0.050		
36	2	1.14		0.073	
38	3	-0.93			0.063
39	3	-0.52			0.065
46	4	-0.31			0.066
48	0	-2.18			0.057
59	3	0.52			0.070
81	3	-0.93		0.063	
89	3	0.52			0.070
100	0	61.54		0.364	
102	3	-0.52			0.065
105	4	0.31		0.069	
107	4	0.10			0.068
113	3	-0.93			0.063
134	3	0.52			0.070
138	4	-0.10			0.067
140	0	-3.63		0.050	
141	0	2.18			0.078
143	4	0.10			0.068
145	3	0.52			0.070
146	2	1.41			0.074
180	4	-0.31			0.066
190	0	3.01		0.082	
196		< 0.110			
203	4	0.10			0.068
224	3	-0.73		0.064	
241	4	0.31			0.069
247	4	-0.31	0.066		



Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)—Continued

SO<sub>4</sub> (Sulfate)

mg/L



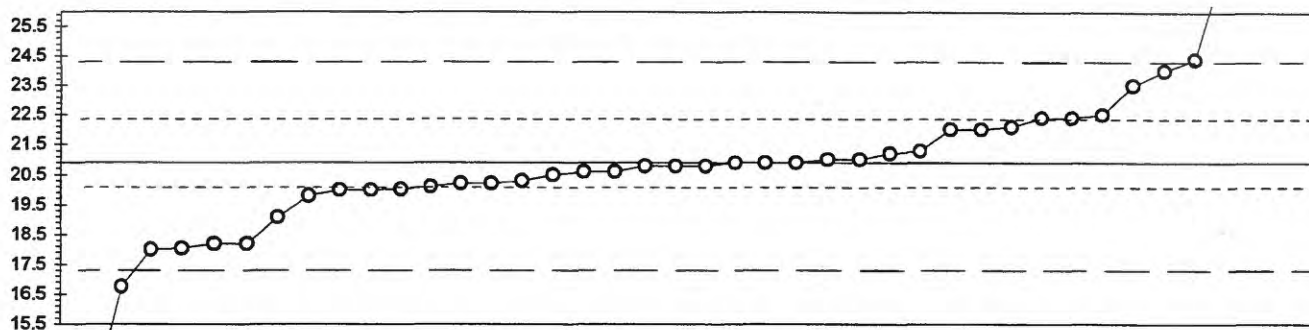
0. Other							
7. Ion chromatography							
22. Colorimetric							
	N =	1	23	1	1	1	3
	Minimum =	2.32	1.97	2.84	2.90	12.30	2.00
	Maximum =		3.99				3.00
	Median =		2.29				
	F-pseudosigma =		0.10				

Lab	Rating	Z-value	0	7	22	22mtb	50	51
2	4	-0.38		2.26				
3	0	8.46		3.99				
8	2	-1.20		2.10				
23	0	2.58			2.84			
25	NR			< 5				
26	4	-0.08		2.32				
33	3	-0.54		2.23				
36	NR							
48	1	-1.71						< 5
58	0	50.92					12.30	2.00
59	4	-0.08	2.32					
64	4	0.13		2.36				
89	3	0.69						2.47
93	1	-1.87		1.97				
100	3	0.95		2.52				
102	2	-1.20		2.10				
105	4	0.23		2.38				
110	4	0.13		2.36				
111	3	-0.84		2.17				
113	0	-6.70		< 1				
134	4	-0.31		2.28				
138	3	0.54		2.44				
140	0	3.40						3.00
141	NR							< 10
145	4	-0.28		2.28				
146	NR							< 5
180	0	2.89				2.90		
190	4	-0.33		2.27				
196	4	0.08		2.35				
197	4	-0.21		2.29				
203	NR				< 2.5			
224	4	0.14		2.36				
228	4	-0.40		2.26				
237	0	3.19		2.96				
238	0	3.19		2.96				
247	2	-1.10		2.12				

MPV = 2.34  
F-pseudosigma = 0.20  
N = 30  
Hu = 2.52  
HI = 2.26

Table 15. -Statistical summary of reported data for standard reference water sample P-25 (low ionic strength constituents)-Continued

Sp Cond (Specific Conductance)  $\mu\text{S}/\text{cm}$



41. Direct reading

N = 42  
Minimum = 12.6  
Maximum = 206.8  
Median = 20.9  
F-pseudosigma = 1.8

MPV = 20.9  
F-pseudosigma = 1.8  
N = 42  
Hu = 22.4  
Hi = 20.0

Lab	Rating	Z-value	41
2	0	-2.31	16.8
3	4	-0.03	20.8
8	2	-1.50	18.2
23	0	-4.66	12.6
25	0	32.26	78.0
26	4	-0.03	20.8
28	3	-1.00	19.1
33	4	0.03	20.9
36	2	-1.50	18.2
38	0	104.96	206.8
39	4	-0.48	20.0
46	4	0.25	21.3
48	4	-0.03	20.8
58	3	-0.59	19.8
59	3	0.93	22.5
64	4	-0.31	20.3
81	1	1.78	24.0
89	4	-0.42	20.1
100	4	0.08	21.0
101	4	-0.14	20.6
102	3	0.65	22.0
105	3	0.87	22.4
107	4	0.03	20.9
110	4	-0.37	20.2
111	4	-0.48	20.0
113	4	-0.14	20.6
134	3	0.65	22.0
140	4	0.20	21.2
141	4	0.08	21.0
143	4	-0.20	20.5
145	2	1.50	23.5
146	1	2.00	24.4
180	1	-1.61	18.0
190	3	0.87	22.4
196	0	3.98	27.9
203	4	0.03	20.9
204	4	-0.37	20.2
224	0	4.04	28.0
228	1	-1.59	18.0
241	0	58.79	125.0
244	3	0.71	22.1
247	4	-0.47	20.0

**Table 16.** -Statistical summary of reported data for standard reference water sample Hg-21 (mercury)

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Definition of analytical methods, abbreviations, and symbols

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Analytical methods

- |                            |                                 |
|----------------------------|---------------------------------|
| 0. Other/Not reported      |                                 |
| 8. AA: cold vapor          | = atomic absorption: cold vapor |
| 9. AA: atomic fluorescence | = atomic fluorescence           |
| 11. AA: hydride            | = atomic absorption: hydride    |
- 

Abbreviations and symbols

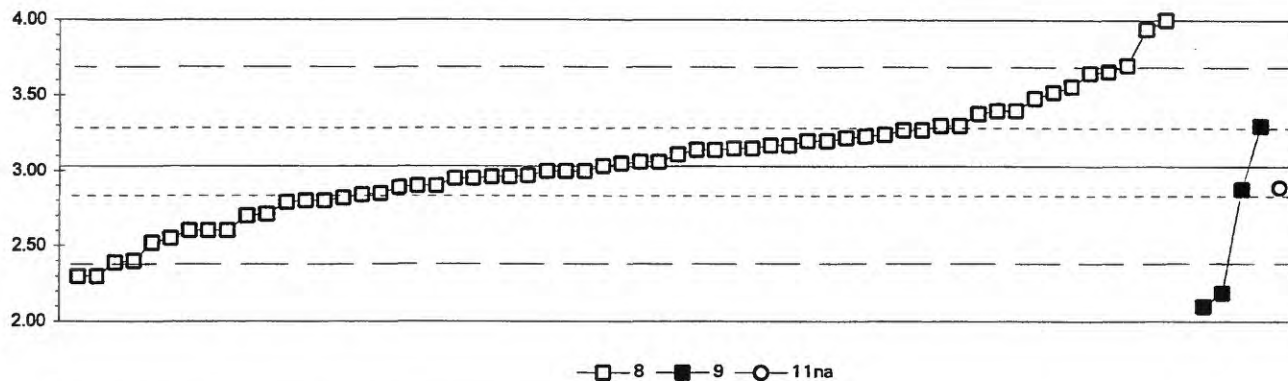
- |               |                                       |
|---------------|---------------------------------------|
| N             | = number of samples                   |
| MPV           | = most probable value                 |
| F-pseudosigma | = nonparametric statistic deviation   |
| Hu            | = upper hinge value                   |
| Hi            | = lower hinge value                   |
| µg/L          | = micrograms per liter                |
| Lab           | = laboratory code number              |
| NR            | = not rated, less than value reported |
| <             | = less than                           |
- 

<u>Constituent</u>	<u>page</u>
Hg      Mercury	105

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Table 16. Statistical summary of reported data for standard reference water sample Hg-21 (mercury)—Continued

Hg (Mercury)  $\mu\text{g/L}$



8. AA: cold vapor  
9. AA: atomic fluorescence  
11na. AA: hydride  $\text{NaBH}_4$

	N = 60	4	1
Minimum =	2.30	2.10	2.89
Maximum =	4.45	3.30	
Median =	3.06	2.54	
F-pseudostigma =	0.33		

MPV = 3.03  
F-pseudostigma = 0.33  
N = 65  
Hu = 3.27  
Hl = 2.82

Lab	Rating	Z-value	8	9	11na
3	2	-1.30	2.60		
7	4	0.41	3.17		
8	3	-0.70	2.80		
10	1	1.85	3.65		
11	2	-1.45	2.55		
12	4	0.50	3.20		
13	3	0.56	3.22		
15	4	-0.19	2.97		
16	0	-2.20	2.30		
18	4	0.05	3.05		
24	0	2.90	4.00		
26	3	0.59	3.23		
28	4	0.41	3.17		
32	1	-1.93	2.39		
34	3	0.80		3.30	
36	4	0.50	3.20		
39	4	-0.43	2.89		
42	0	-2.20	2.30		
46	4	0.00	3.03		
48	4	-0.40	2.90		
50	3	0.80	3.30		
55	4	0.08	3.06		
58	3	-1.00	2.70		
60	2	1.04	3.38		
61	1	1.88	3.66		
68	4	-0.22	2.96		
69	4	-0.10	3.00		
70	1	-1.54	2.52		
75	4	0.08	3.06		
76	3	-0.58	2.84		
81	2	1.10	3.40		
86	0	-2.53		2.19	
87	0	4.25	4.45		
89	3	0.62	3.24		
96	4	0.23	3.11		
97	2	1.34	3.48		
100	1	1.58	3.56		
105	3	0.71	3.27		
109	3	-0.73	2.79		
111	0	-2.80		2.10	
113	2	-1.30	2.60		
118	4	-0.43		2.89	
119	4	-0.10	3.00		
120	4	-0.40	2.90		
128	1	2.00	3.70		
133	4	0.32	3.14		
134	4	-0.22	2.96		
138	2	1.10	3.40		
141	2	1.46	3.52		
142	3	-0.64	2.82		

Lab	Rating	Z-value	8	9	11na
144	3	-0.55	2.85		
145	3	0.71	3.27		
146	4	-0.25	2.95		
149	4	-0.10	3.00		
198	4	0.32	3.14		
203	4	0.35	3.15		
211	0	2.72	3.94		
212	3	-0.70	2.80		
213	3	0.80	3.30		
221	1	-1.90	2.40		
231	2	-1.30	2.60		
234	4	-0.25	2.95		
235	4	0.35	3.15		
245	4	-0.46		2.88	
247	3	-0.97	2.71		

**Table 17. -Most probable values for constituents and properties in standard reference samples distributed in October 1995**

[MPV, most probable value; ug/L, microgram per liter; mg/L, milligram per liter; uS/cm, microsiemen per centimeter at 25 degrees Celsius]

**T-137 (trace constituents)**

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Ag	0.3 µg/L	1.5	Mg	10.1 mg/L	0.5
Al	30.5 µg/L	6.9	Mn	98 µg/L	5
As	0.6 µg/L	1.0	Mo	8.9 µg/L	1.8
B	15.6 µg/L	4.2	Na	22.0 mg/L	1.1
Ba	65.0 µg/L	4.8	Ni	15.0 µg/L	2.5
Be	5.2 µg/L	0.5	Pb	6.3 µg/L	1.0
Ca	38.1 mg/L	1.5	Sb	15.5 µg/L	2.7
Cd	6.80 µg/L	0.52	Se	1.3 µg/L	1.4
Co	0.4 µg/L	0.5	SiO <sub>2</sub>	6.96 mg/L	0.56
Cr	19.4 µg/L	2.0	Sr	230 µg/L	14
Cu	1.9 µg/L	1.2	Ti	162 µg/L	23
Fe	71 µg/L	9	U	10.0 µg/L	0.5
K	1.19 mg/L	0.13	V	14.0 µg/L	1.6
Li	8.7 µg/L	1.5	Zn	49.5 µg/L	4.2

**M-136 (major constituents)**

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Alkalinity	152 mg/L	5	Na	108 mg/L	4
B	200 µg/L	15	total P	0.885 mg/L	0.033
Ca	62.8 mg/L	2.1	pH	8.33	0.14
Cl	92.0 mg/L	2.5	SiO <sub>2</sub>	13.0 mg/L	0.8
DSRD	568 mg/L	15	SO <sub>4</sub>	150 mg/L	6
F	1.04 mg/L	0.07	Sp Cond	920 µS/cm	27
K	6.53 mg/L	0.47	Sr	567 µg/L	26
Mg	15.3 mg/L	0.7	V	6.9 µg/L	1.4

**N-47 (nutrient constituents)**

Analyte	MPV	F-pseudosigma
NH <sub>3</sub> as N	0.165 mg/L	0.023
NH <sub>3</sub> +OrgN as N	0.48 mg/L	0.16
NO <sub>3</sub> +NO <sub>2</sub> as N	0.239 mg/L	0.023
total P as P	0.223 mg/L	0.013
PO <sub>4</sub> as P	0.151 mg/L	0.012

**N-48 (nutrient constituents)**

Analyte	MPV	F-pseudosigma
NH <sub>3</sub> as N	0.698 mg/L	0.037
NH <sub>3</sub> +OrgN as N	1.288 mg/L	0.200
NO <sub>3</sub> +NO <sub>2</sub> as N	0.780 mg/L	0.065
total P as P	0.794 mg/L	0.041
PO <sub>4</sub> as P	0.580 mg/L	0.028

**P-25 (low ionic strength constituents)**

Analyte	MPV	F-pseudosigma	Analyte	MPV	F-pseudosigma
Acidity	4.0 mg/L	3.1	Na	1.28 mg/L	0.07
Ca	1.67 mg/L	0.08	pH	6.52	0.20
Cl	1.30 mg/L	0.17	PO <sub>4</sub> as P	0.068 mg/L	0.005
F	0.139 mg/L	0.022	SO <sub>4</sub>	2.34 mg/L	0.20
K	0.55 mg/L	0.05	Sp Cond	20.9 µS/cm	1.8
Mg	0.350 mg/L	0.019			

**Hg-21 (mercury)**

Analyte	MPV	F-pseudosigma
Hg	3.03 µg/L	0.33